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EMPLOYMENT OF DIRECT FIRE SYSTEMS  
DURING OFFENSIVE OPERATIONS

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A thesis presented to the Faculty of the U.S. Army  
Command and General Staff College in partial  
fulfillment of the requirements for the  
degree

MASTER OF MILITARY ART AND SCIENCE

by  
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1980

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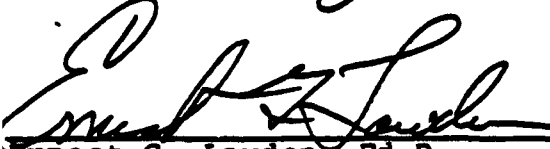
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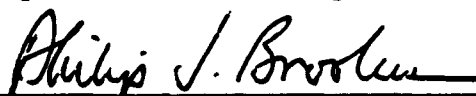
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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement)

## ABSTRACT

**Employment of Direct Fire Systems During Offensive Operations**, by Major Peter J. Palmer, USA, 358 pages.

This thesis examines some of the reasons behind task force commanders inability to properly employ their direct fire systems during the conduct of offensive operations at the National Training Center (NTC). The thesis develops a set of criteria that is critical to the proper employment of direct fire systems during offensive operations. Using these criteria as a basis of analysis, this study reviews current NTC direct fire studies, doctrine and unit SOPs to identify shortfalls, discrepancies and problems that may affect the proper employment of direct fire systems during offensive operations.

This thesis finds that NTC direct fire studies highlight numerous problems in direct fire performance based on the established criteria. These problems can be directly attributed to shortfalls and discrepancies in doctrinal manuals, unit SOPs and unit training practices. The most significant problems include the failure to emphasize the integration of direct fire systems as part of the scheme of maneuver and the failure to provide the necessary tactics, techniques and procedures (TTP) to do so.

This thesis makes several recommendations on what changes should be made to doctrine, unit SOPs and unit training practices. It also points to several areas of future research that would benefit the continued analysis of this direct fire problem.

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## CHAPTER I

### INTRODUCTION

#### BACKGROUND

What we need in battle is more and better fire. What we need to seek in training are any and all means by which we can increase the ratio of effective fire when we have to go to war. The discipline, the training methods, and the personnel policies of our forces should all be regulated to conform with this one fundamental need. In whatever we do to mold thought of the combat soldier, no other consideration should be given priority ahead of this decisive problem.

1

- S.L.A Marshal

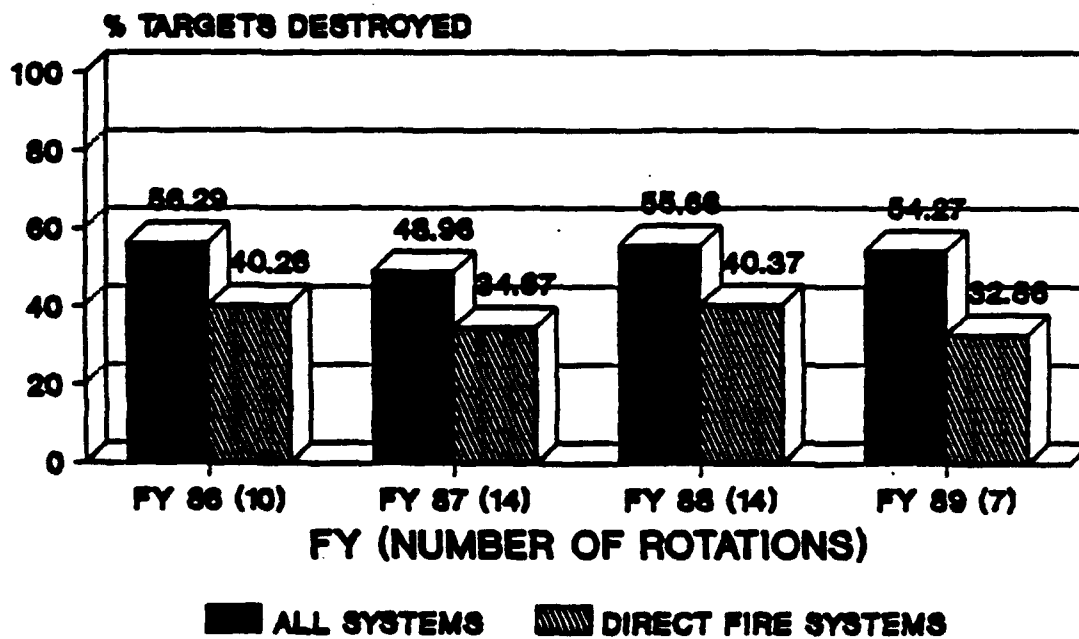
Marshal made these comments in his 1947 study of infantry direct fire operations in WWII. Since then, the number and types of direct fire systems have increased substantially. Increased rates of fire, lethality, and ranges further complicate the leader's ability to employ direct fire systems. Along with the employment of more complex direct fire systems, task force commanders face a growing need to integrate and synchronize the other battlefield operating systems (BOS).

Since 1985, the National Training Center (NTC) has conducted a series of studies involving direct fire. These NTC studies have identified a substantial decline in direct fire performance. Problems include a lack of direct fire planning (especially during offensive operations), failure



to prepare and rehearse the direct fire battle, and inadequate control of direct fire systems during the execution phase of the battle.<sup>2</sup>

## ESX DIRECT FIRE TREND



TAKEN FROM NTC INF/ARMOR SCHOOL BRIEFING

Figure 1-1

[The solid bars represent OPFOR vehicles that have been destroyed by all available systems (direct fire, indirect fire, mines, and CAS). The hatched lines represent those vehicles killed by direct fires only.]

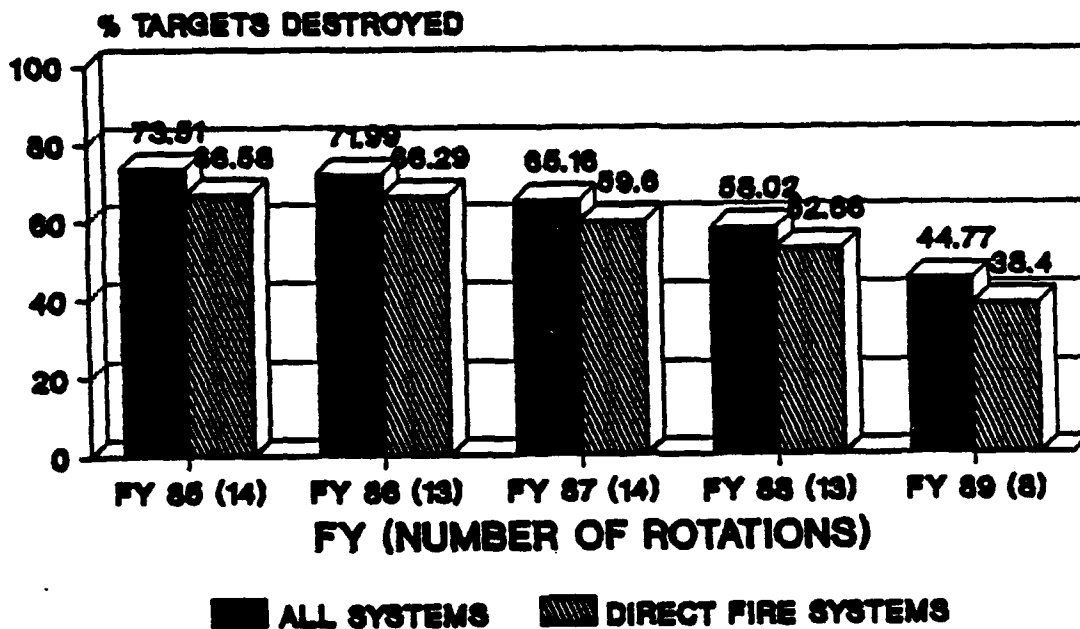
The NTC record of direct fire performance since 1985 highlights these problems. Figure 1-1 shows the Engagement Simulation Exercise (ESX) results from 1986 through the seventh rotation in 1989. As the graph shows, the average task force destroys less than sixty percent of the OPFOR in the ESX.<sup>3</sup>

This chart also shows that direct fire systems are the task force's most productive killing system. Yet the average task force does not kill more than forty-one percent of the enemy vehicles with direct fire weapons. FY 89 shows a six and one-half percent decrease in direct fire killing effectiveness.<sup>4</sup>

Another significant aspect of this graph is the improvement in the contribution of other than direct fire systems to the killing of enemy vehicles. Data from FY 89 shows that systems other than direct fire contributed to over twenty-one percent of the kills, while the previous years' contributions only averaged around sixteen percent. An increased emphasis on the synchronization of other than direct fire systems may be one reason for this increase.<sup>5</sup>

Figure 2 shows the Live Fire Exercise (LFX) results from 1985 through the eighth rotation in 1989. First, there has been a significant decline in the average unit's performance at live fire. Second, direct fire systems contributed to over ninety-six percent of the killing effort, while all other systems contribute less than four percent.<sup>6</sup>

# LIVE FIRE DIRECT FIRE TREND



TAKEN FROM NTC INF/ARMOR SCHOOL BRIEFING

Figure 2-1

[The solid bars represent Live Fire targets that have been destroyed by all available systems (direct fire, indirect fire, mines, and CAS). The hatched lines represent those vehicles killed by direct fires only.]

## PROBLEM STATEMENT

Task force commanders do not properly employ their direct fire systems during offensive operations.

## RESEARCH QUESTIONS

Why are maneuver unit leaders unable to employ their direct fire systems during offensive operations?

The following contributing questions were developed to answer the research question:

1. What are the measurable criteria involving the employment of direct fire systems during offensive operations?<sup>7</sup>

2. Do current studies and NTC direct fire data identify performance failures when compared against the direct fire criteria?

3. Do current U.S. Army doctrinal manuals provide sufficient discussion involving this direct fire criteria?<sup>8</sup>  
Do shortfalls or discrepancies exist?

4. Do current unit SOPs provide sufficient discussion about this direct fire criteria? Do shortfalls or discrepancies exist?

5. Do current unit training practices include this direct fire criteria? Do shortfalls or discrepancies exist?

6. How do the shortfalls identified in the previous questions (if any) compare with each other? Are there trends, similarities, or differences?

7. What impact do these shortfalls or discrepancies have on the effective employment of direct fire systems during offensive operations? Are they significant?

## ASSUMPTIONS

1. Direct fire operations occur at the task force level and below.
2. Current doctrine will not change substantially.
3. A set of criteria exists that can measure effective direct fire operations and performance.
4. Unit SOPs reflect a measurable form of unit training practices and priorities.
5. Schools instruct doctrinal tenets. Therefore a review of doctrine will reflect the main training themes presented during institutional training.

## DEFINITIONS OF TERMS

FM 101-5-1, Operational Terms and Symbols contains definitions for terms not specifically defined below.

AirLand Battle (ALB): "The U.S. Army's basic fighting doctrine...It reflects the structure of modern warfare, the dynamics of combat power, and the application of the classical principles of war to contemporary battlefield requirements."<sup>9</sup>

BLUFOR(Blueforce): Term applied to units playing the role of a friendly force. These units use U.S. doctrine, tactics, techniques and procedures (TTP).

BOS (Battlefield Operating Systems): These systems include: Maneuver, Intelligence, Fire Support, Mobility/

Countermobility/Survivability, Air Defense, Command and Control (C2), Combat Service Support (CSS).

Sub-BOS: (Subordinate Battlefield Operating Systems)

A Sub-BOS is a list of interrelated tasks that support the functions of the main battlefield operating systems. This list is currently under development by the Center for Army Lessons Learned.

Criteria (involving offensive direct fire operations): Criteria are those elements necessary for the proper employment of direct fire systems during offensive operations. The terms direct fire criteria and direct fire considerations are synonymous. Development of the criteria will occur during the research of literature process. These criteria will form the basis for analysis against studies, current doctrine, and unit SOPs. Specific criteria development and definitions are in Appendix A.

Doctrine: "Is the condensed expression of [an Army's] approach to fighting campaigns, major operations, battles and engagements. Tactics, techniques, procedures (TTP), organizations, support structure, equipment and training must all derive from it."

Discrepancies: This term describes differences between similar discussion topics between different manuals or publications.

Engagement Simulation Exercise (ESX): This is one of two training exercises a unit participates in while training at the NTC. The ESX, also called Force-on-Force, has the following elements:

- A dedicated opposing force (OPFOR)
- Multiple Integrated Laser Engagement System (MILES) training devices for all participants
- An instrumentation system that monitors battle-field activities using a position locator and a weapons activity system. The instrumentation system assists in the training feedback and in the evaluation and analysis process. It is not error-free, so observer controllers manually collect MILES casualties and loss-exchange ratios to compensate for possible instrumentation errors.

Using these elements, training units (BLUFOR) fight a simulated battle against opposing forces. Scenarios vary, but normally include both offensive and defensive missions. (The BLUFOR Mission Essential Task List [METL] determines mission development.) The MILES devices control and simulate battlefield activities, while the instrumentation system captures what happens for later battle review.

Enhancement: "Successful tactics, techniques, procedures and training methods used to improve overall unit performance."  
12

Firepower: "Provides the destructive force essential to defeating the enemy's ability and will to fight...."

Tactical leaders must understand the techniques of controlling and integrating fire, maneuver and protection, coordinating direct and indirect fires, naval fires and substituting massed fires for massed troops."<sup>13</sup>

Focused Rotation: NTC has a dual mission to train and provide lessons learned. Therefore, most NTC rotations have a special study conducted with the rotation. A focused rotation includes a specific issue researched in detail. "Focused rotations can be conducted exclusively by the proponent agency or in conjunction with subject matter experts from other agencies. The NTC Observation Division (NOD) also conducts focused rotations using internally developed collection plans (approved by Center For Army Lessons Learned [CALL]) or collection plans provided by the proponent agency."<sup>14</sup>

Fratricide: "Is fire upon friendly units, personnel, or equipment."<sup>15</sup>

Issue: Represents "a category of lessons learned that require action by the subject matter proponent to change, develop or refine doctrine, training, organization, or materiel."<sup>16</sup>

Lessons Learned: Conclusions derived from analysis of military operations. Lessons learned accomplish four tasks:



- \* "Identify needs for resolving issues in doctrine, training, organization, and materiel.

- \* Validate sufficiency of doctrine, training, organization and materiel.

- \* Enhance tactics, techniques, and procedures.

- \* Provide information to commanders that will assist them in their home station and NTC training toward the goal of combat readiness."

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Live Fire Exercise (LFX): This is one of two training exercises a unit participates in at the NTC. This exercise also uses the instrumentation system to monitor battlefield activities. However, the MILES' system simulates only anti-tank missile systems and Army attack helicopter weapon systems. Live missiles are not normally used because they cost too much, but if the missiles are available they can be used. The training exercise has both offensive and defensive missions that use live ammunition, including direct and indirect fire systems and Air Force ordnance. Approximately six-hundred two-dimensional silhouette target systems, controlled by a main computer, represent the OPFOR. The targets record both live-round impact and MILES hits. The computer system replicates doctrinal Soviet attack and defense scenarios. Although the computer system can tabulate scores, climate and other factors affect the accuracy. Therefore, specially designated personnel manually do the live fire scoring process.

Observation: "An observation is a significant event in an exercise. This unprocessed information can be positive or negative. All input to the lessons learned system begins as an observation until it is categorized as an enhancement, validation or issue."<sup>18</sup>

Observer/Controller (O/C): The title used by the officers assigned to the NTC who train and control participating units. Every major leadership and staff level position has an O/C assigned. An O/C will normally have already served in the position he observes (e.g. A company commander will have an O/C who had already been a company commander). The O/Cs must act as unbiased observers during the conduct of the exercise. They conduct after action reviews (AARs) with their counterparts to help them identify strong and weak points from the training events. The O/C also acts as a controller to assist in battlefield effects (throwing artillery simulators) and assisting in the safe conduct of the exercise (preventing unsafe acts).

OPFOR (Opposing Force): The opposing force--60th Guards Motorized Rifle Division--is drawn from the 177th Armored Brigade, which is permanently stationed at Fort Irwin. The brigade consists of two battalions that are trained in Threat tactics and organization. These two units represent a motorized rifle division (minus). They are

equipped with Threat vehicles or Threat vehicle replicas.  
The OPFOR soldiers wear distinctive Threat uniforms.

Proponency: "Responsibility for doctrine, organizational structure, materiel, equipment or training development in a specific subject area."<sup>19</sup>

Rotation (as it applies to NTC): "A NTC rotation encompasses a single unit's training period while at the NTC. NTC conducts fourteen rotations a year with a participating brigade consisting of two or three battalions. A rotation normally has the following phases: Deployment, Equipment Draw/Battle Preparation, ESXs, LFXs, Equipment Turn-in and Redeployment. Actual field training lasts<sup>20</sup> approximately two weeks."

Shortfalls: Describes the failure of a publication to discuss or address a specific point of doctrine.

Subject Matter Expert (SME): "Tactically and technically proficient officer or NCO normally from a TRADOC school or coordinating center who can make observations in a proponency area. They must draw conclusions and make recommendations that may impact on doctrine, organization, equipment, leadership, or training. The SME should be in or<sup>21</sup> above the [rank of Captain/Sergeant First Class]."

Standard Operating Procedures (SOPs): "A set of instructions covering those features of operations, which lend themselves to a definite or standard procedure without

loss of effectiveness. The procedure is applicable unless<sup>22</sup>  
ordered otherwise."

Tactics, Techniques and Procedures (TTP): Each term has a separate definition. However, doctrine writers normally use the abbreviation "TTP" when discussing actions or aspects that can be used to accomplish doctrinal tenets. They are not doctrinal tenets.

Tactics: "1. The employment of units in combat. 2. The ordered arrangement and maneuver of units in relation to each other and/or to the enemy in order to<sup>23</sup>  
utilize their full potentialities."

Techniques: "Refers to the basic methods of using equipment and personnel...[it] gives detail to how<sup>24</sup>  
commanders actually carry out assignments."

Procedures: "A particular course or mode of<sup>25</sup>  
action that describes how to perform a certain task."

Take Home Package: "A collection of audio, audio-visual, and written products given to the rotating units for use in home station training. It includes communications cuts, after-action reviews, and written comments that provide the unit an overview and assessment of the planning, preparation, and execution for each of their missions as<sup>26</sup>  
they relate to the [seven] operating systems."

Task Force (TF): "Based upon organization, a battalion-sized unit of the combat arms consisting of a battalion

control headquarters, with at least one of its major subordinate elements (a company) and the attachment of at least one company-sized element of another combat or combat support arm."<sup>27</sup>

Validation: "A conclusion made from analysis of observations which reinforces existing doctrine, training, organization and material. Validations serve to reemphasize teaching points requiring attention from leaders at all levels."<sup>28</sup>

#### SCOPE

This study cannot determine all the reasons why commanders cannot properly employ their direct fire systems. A thorough analysis would require a complete review of all these areas: doctrine, training (institutional and unit), equipment/system capability, and leadership. This study will only address a portion of the doctrine and training areas. This study also will identify additional or further study requirements. This sizing down of the study topic in no way lessens the importance of other phases and aspects of direct fire operations.

## LIMITATIONS

1. This study cannot discuss all elements of the direct fire criteria due to lack of resources and time.
2. This study cannot include further field observations.
3. NTC data has the following limitations:
  - a. Although small arms are used at the NTC, there is no regular collection of direct fire data. Therefore, this study only includes data collected on anti-tank systems (Instrumentation limitation).
  - b. ESX instrumentation limitations do not allow for exact direct fire data collection; however, identification of direct fire trends is possible.
  - c. LFX scoring and data collection have varied over the years. (This variation is not significant enough to effect identification of trends.)
  - d. Observation data collection has some degree of bias based on the observer's expertise and views. However, data used in this study is the result of a high volume of observations and therefore limits bias.
4. NTC scenario limitations:
  - a. NTC has just started offensive scenarios involving trenchline and strongpoint systems (doctrinal Soviet defensive systems). Therefore, direct fire data may not reflect the actual results that an attack of a doctrinal

Soviet defensive position may produce. Results may be worse because the scenario and defense are more difficult.

b. NTC terrain and environment differ from in Europe, Korea and other parts of the world. Therefore, the employment of direct fire systems will vary accordingly.

### DELIMITATIONS

1. This study will not include firing data from units stationed in Europe or Korea. Reasons for this include:

a. Gunnery and unit training programs do not replicate the combat environment or produce a similar data base that is available at the NTC.

b. The Combat Maneuver Training Center (CMTTC) in Europe does not have a data base comparable to the NTC. In addition, CMTTC does not conduct task force level live fire operations.

c. There is no Combat Training Center (CTC) located in Korea.

2. This study focuses on the mid-to-high intensity battlefield because of the available data base. Application to the low-to-mid intensity battlefield may be possible, but it will require research beyond the scope of this study.

3. This study will not include a major historical review. However, this study will use selected excerpts from history to reinforce current analysis.

4. This study will use only unclassified sources.

5. This study will not address the employment of indirect fires, close air support, or combat service support with direct fire systems. The employment and synchronization of these assets is necessary for tactical success, but it is beyond the scope of this paper.

6. By strict definition, artillery in the direct fire mode and army air (attack helicopters) are direct fire systems. They are not included in this study because they would not normally fall under the control of the task force commander as direct fire systems. They are also beyond the scope of this study.

7. Doctrine at the strategic and operational levels, as outlined in FM 100-5, is beyond the scope of this study. Therefore, this study will focus on TTP contained in both training and fighting manuals.

8. Criteria development focuses on employment of direct fire systems during offensive operations.

9. This study's review of TTP focuses only on modernized units. (M1/M2).

10. This study focuses only on U.S. Army TTP. Sister services and other international forces may have additional



information, but it would exceed the capabilities of this study.

11. TTP review will be limited to planning, command and control, and offensive chapters.

12. This study discusses only a portion of the identified criteria. The scope of the study cannot include a full analysis of the criteria involved in the employment of direct fire systems in the offense.

#### **SIGNIFICANCE OF THE STUDY**

**"Team Black (Brave Company) orient your fires on the hill left of the objective!" "Strike Leader (Battalion Commander), What hill?"**

**-- Anonymous conversation involving a Battalion Commander's attempt to focus his Bravo Company's direct fires on an enemy position. 30**

**"I wasn't sure where the infantry was!"**

**-- Anonymous tank Team Commander on why his tanks didn't fire on the objective. 31**

**"Cease Fire! Cease Fire! \_\_\_\_ it! Can anyone get Brave Two-Six(1st squad leader) to stop firing. The enemy is way out of range."**

**-- Anonymous Infantry Platoon Leader who was trying to gain control of his platoons fires. 32**

**Lack of coordinated fires affects the conduct of Airland Battle Doctrine. "Airland Battle Doctrine describes**

the Army's approach to generating and applying combat power at the operational and tactical levels." <sup>33</sup> One key component of combat power is firepower. FM 100-5 states: "Firepower provides the destructive force essential to defeating the enemy's ability and will to fight.... Tactical leaders must understand the techniques of controlling and integrating fire, maneuver and protection, coordinating <sup>34</sup> direct and indirect fires...."

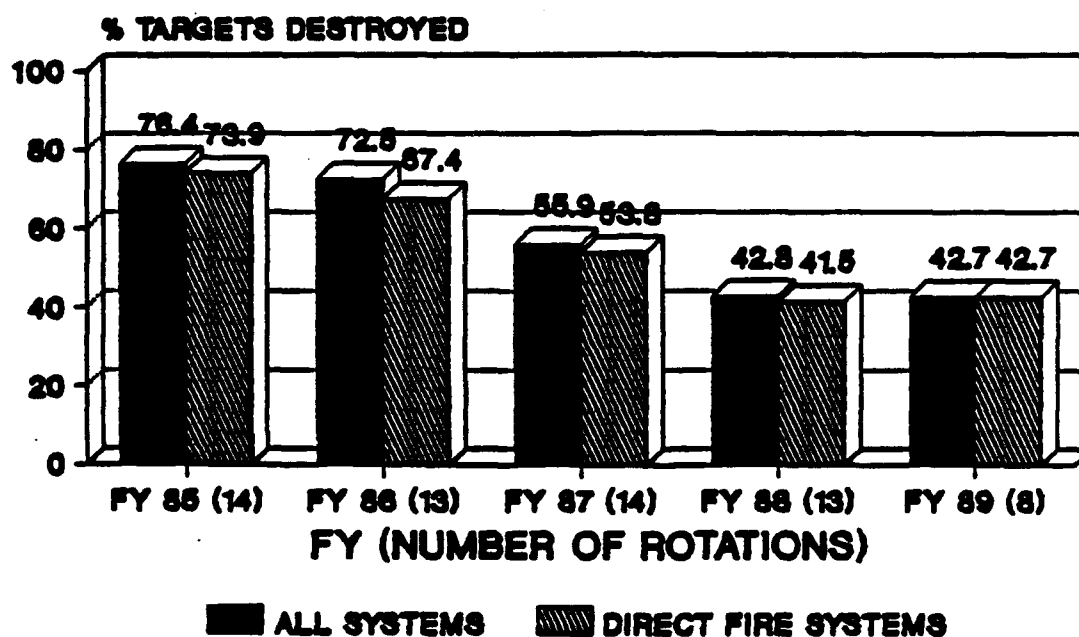
At task force level, the primary sources of firepower are the unit's direct fire systems. Artillery, close air support, and attack helicopters are available to augment firepower, but only on a limited basis.

This study focuses on the offensive aspects of direct fire operations. As Figure 3 illustrates, offensive direct <sup>35</sup> fire operations are also experiencing problems. However, direct fire systems contribute even more to the offensive battlefield. These other systems contributed only two percent of the total enemy vehicle kills, while direct fire <sup>36</sup> systems produced the remaining ninety-eight percent.

This study cannot encompass all the problems involved in the employment of direct fire systems at the task force and below levels. It will, however, attempt to solve a small piece of the problem by examining the criteria necessary to employ direct fire systems effectively during offensive operations. The significance of this study increases

with the development of ALB Future's concept of the Non-  
 37  
 Linear Battlefield. Under these pending changes, offen-  
 sive operations and not defensive operations will dominate  
 future battlefield events.

## LIVE FIRE (OFFENSE) DIRECT FIRE TREND



TAKEN FROM NTC INF/ARMOR SCHOOL BRIEFING

Figure 1-3

[The solid bars represent Live Fire targets that have been destroyed by all available systems (direct fire, indirect fire, mines, and CAS). The hatched lines represent those vehicles killed by direct fires only.]

## RESEARCH OBJECTIVES

The intended contributions of this study include:

- \* Identify criteria that affect the conduct of direct fire during offensive operations.
- \* Identify task force level doctrine, TTP and unit SOP shortfalls and discrepancies that affect offensive direct fire operations.
- \*. Provide recommendations for fighting and training manuals TTP's and unit SOPs on ways to correct the identified problem areas.
- \* Identify areas requiring additional study.

## CHAPTER ONE

### ENDNOTES

1. S.L.A. Marshall, Col., Men Against Fire. (Gloucester, Massachusetts: Peter Smith, 1978), p. 23.

2. These comments summarize problems identified in the NTC studies and observations. Appendix C.

3. This graph was taken from the 1989 NTC Infantry/Armor Conference Briefing. The briefing was prepared by the NTC Observation Group from NTC live fire and ESX data bases. [Note: I used the graphs in this chapter to highlight two points. First, I used them to demonstrate that a direct fire does exist. Second, I used them to demonstrate the significant role that direct fire systems play in destroying vehicles and targets. The data used to develop these graphs include hundreds of battles. Therefore, the trends highlighted by these graphs are relatively free of bias, systems limitations and scenario changes.]

4. These percentages were calculated by subtracting the direct fire data from FY 88 from FY 89. (eg.  $40.37\% - 32.86\% = 6.51\%$ )

5. Training institutions and doctrinal manuals have substantially increased their discussion of battlefield synchronization in the last five years. For example, the current FM 71-2 has a new offensive section dedicated to "Synchronization of Offensive Operations." (p3-28) The Pre-Command Course at Ft. Leavenworth has a special exercise that incorporates Major Clyde Long's 1989 MMAS study entitled Synchronization of Combat Power at the Task Force Level: Defining a Planning Methodology. This increase in emphases may account for some increase in performance by the other than direct fire systems. Another reason may also be the increased proficiency of the other systems. For example, the Artillery crews and fire support systems may be better trained. A separate study may be necessary to determine all reasons for this increase in performance.

6. These percentages were calculated by subtracting the live fire "direct fire systems" column from the "all systems" column for each year and summing the results (eg.  $(73.51 - 66.58) + (71.99 - 66.29) + \dots = 5.984$ ) Then a rounded off percentage was used for the quote. (eg. 6% and

94%) The ESX data was not noted due to the limitations of ESX. The artillery in ESX is computer generated and therefore its response time and accuracy is perfect. So when a grid is called, the correct amount and grid is fired. Using the same calculation procedures the average percentage difference during ESX is 16.755 or 17%.

7. "Criteria" is defined later on in Chapter One's "Definition of Terms." Additional discussion also appears in Appendix A. However, this study will use the term criteria to describe a list of considerations that substantially impact of direct fire operations.

8. For purposes of this study, "Shortfalls" indicate the lack of discussion concerning critical elements. For example, a doctrinal manual may not discuss direct fire control measures that can assist in offensive direct fire command and control. "Discrepancies" are contradictions in requirements in or between manuals. For example, FM 71-2 discusses four steps in attacking a strongpoint (p. 3-58). FM 71-1 and ARTEP 71-2-MTP do not discuss the same four steps.

9. U.S. Department of the Army, Operations, Field Manual 100-5. (Washington, D.C.: Government Printing Office, 1986), p. 9)

10. "Sub-BOS Framework." draft report completed by the Center for Army Lessons Learned, 1989. The report forms the basis for further studies by CALL and BDM.

11. U.S. Department of the Army, Operations, Field Manual 100-5. (Washington, D.C.: Government Printing Office, 1986), p. 6)

12. NTC Observation Division (NOD). Operations and Functions. This is an internal SOP for the NOD. The memorandum does not include a date. The SOP was internally produced. This term and its definition were taken from Annex C--Definitions, p. 1.

13. U.S. Department of the Army, Operations, Field Manual 100-5. (Washington, D.C.: Government Printing Office, 1986), p. 12-13.

14. NTC Observation Division (NOD). Operations and Functions. This is an internal SOP for the NOD. The memorandum does not include a date. The SOP was internally produced. This term and its definition were taken from Annex C--Definitions, p. 1.

15. Martin Goldsmith, "Applying the National Training Center Experience Incidence to Ground-to-Ground Fratricide," RAND, (Santa Monica, California: The RAND Corporation, February, 1986). Also reference Appendix C.

16. NTC Observation Division (NOD). Operations and Functions. This is an internal SOP for the NOD. The memorandum does not include a date. The SOP was internally produced. This term and its definition were taken from Annex C--Definitions, p. 1.

17. Ibid.

18. Ibid.

19. Ibid.

20. Ibid, p. 2.

21. Ibid, p. 2.

22. U.S. Government Printing Office, Department of Defense Dictionary of Military And associated Terms, JCS Pub 1. (Washington, D.C.: Government Printing Office, 1986), p. 344.

23. U.S. Department of the Army, Doctrinal Terms: Doctrine, Tactics, Techniques, and Procedures TRADOC PAM 34-1. (Ft Monroe, Virginia: Government Printing Office, July 1984), p. 6

24. Ibid, p. 8.

25. Ibid, p. 9.

26. NTC Observation Division (NOD). Operations and Functions. This is an internal SOP for the NOD. The memorandum does not include a date. The SOP was internally produced. This term and its definition were taken from Annex C--Definitions, p. 2.

27. U.S. Department of the Army, Operational Terms and Symbols, Field Manual 101-5-1. (Washington, D.C.: Government Printing Office, 1985), p. 1-71.

28. NTC Observation Division (NOD). Operations and Functions. This is an internal SOP for the NOD. The memorandum does not include a date. The SOP was internally produced. This term and its definition were taken from Annex C--Definitions, p. 2.

29. These limitations were identified during personal interviews with NTC live fire and ESX systems personnel during my tenure at the NTC.

30. This quote is from my personal observation as an O/C at NTC.

31. Ibid.

32. Ibid.

33. U.S. Department of the Army, Operations, Field Manual 100-5. (Washington, D.C.: Government Printing Office, 1986), p. 14)

34. Ibid, p. 12.

35. This graph was taken from the 1989 NTC Infantry/Armor Conference Briefing. The briefing was prepared by the NTC Observation Group from NTC live fire and ESX data bases.

36. These percentages were calculated from figure 3 by subtracting the live fire "direct fire systems" column from the "all systems" column for each year and summing the results (eg.  $(76.4 - 73.9) + (72.5 - 67.4) + \dots = 2.2$ ) Then a rounded off percentage was used for the quote. (eg. 2% and 98%)

37. This concept was taken from a draft paper and briefing prepared by the TRADOC commander on 28 February 1990 for presentation to the Chief of Staff of the Army.



## CHAPTER II

### REVIEW OF LITERATURE

This chapter will identify and review literature related to the first four research questions. The chapter contains four sections that correspond with the research questions. The first section addresses the identification of sources used to develop direct fire criteria. The second section summarizes the identified direct fire related studies. The third section contains a summary of task force related manuals. The final section summarizes a representative sample of task force standard operating procedures. A complete discussion of the reviewed sources is in the appendices<sup>1</sup> portions of this paper (Appendices A,B,C).

### ANALYSIS AND CRITERIA IDENTIFICATION

**Research Question 1.** What are the measurable criteria involving the employment of direct fire systems during offensive operations?

Chapter three and Appendix A contain a full discussion involving the development of the direct fire criteria. The three sources used in the development of these criteria include: the 1989 NTC direct fire Armor/Infantry Conference briefing, BG Wass de Czege's paper entitled Understanding

and Developing Combat Power, and the Center for Army Lessons Learned (CALL) study entitled Sub-BOS.

The NTC observation division (NOD) prepared the NTC direct fire briefing using five years of data, observations and direct fire studies. NTC used the briefing to highlight a significant downward trend in direct fire performance at NTC since 1985. The briefing identifies recurring problems involving all aspects of direct fire operations at the NTC. Further, it addresses those actions important to the proper  
2  
employment of direct fire systems.

BG Wass de Czege wrote his paper in 1984. In it, he establishes measurable combat power variables. This MMAS study borrows several of the variables BG Wass de Czege discovered, and uses BG Wass de Czege's analytical frame-  
3  
work.

The Sub-BOS Study is an on-going study by the Center for Army Lessons Learned (CALL). The study identifies the subordinate battle operating tasks that support the functions of the main battlefield operating systems. This study remains under review by BDM Corporation and CALL. Currently  
4  
only a draft version is available for use here.

## CURRENT DIRECT FIRE STUDIES

"Recent studies have also been used to gain insights into likely nature of contemporary operations."

<sup>5</sup>  
FM 100-5

**Research Question 2.** Do current studies and NTC direct fire data identify performance failures when compared against the direct fire criteria?

To answer this question, it is first necessary to identify applicable studies. This MMAS thesis contains twelve NTC derived direct fire studies. Appendix C contains a bibliographic essay that completely reviews each of these studies against the established criteria. A summary of these essays is included below:

\* CALL/NTC Direct Fire Study (85, update 88): This 1985 study looks at doctrine and NTC direct fire performance during the Engagement Simulation Exercise (ESX). This study did not evaluate live fire direct fire operations, but focuses on anti-tank (AT) systems during planning, preparation and execution of direct fires. This is the first NTC study to highlight a direct fire problem. Its most significant finding is the failure of the average task force to mass fifty percent of its direct fire systems during a battle. Other identified problems include: accomplishment of commander's intent, use of control measures, pre-combat checks (PCC) and doctrinal shortfalls.

**\* CALL/NTC Direct Fire Study Briefing (87-88):**

This briefing is a summary of data collected over six rotations. The collection effort centered on direct fire operations. The data includes both live fire and ESX defensive and offensive operations. The data highlight significant problems in direct fire planning, preparation, and execution.  
10

tion.

**\* USAIS TOW Study (NTC rotation 88-5,7):** This study summarizes two 1988 focused rotations involving a comparative analysis between live TOW and TOW MILES. The studies concluded that TOW MILES is an adequate training simulator for the live missile. The studies identified unit training problems in missile system operation and preparation knowledge.  
11

tion knowledge.

**\* United States Army Armor Center (USAARMC) Direct Fire Study (NTC rotation 88-3):** Sources for this study included a paper and briefing slide packet. The paper outlined the focused rotation collection plan and objectives, but contained no specific comments involving results. The briefing summarized observations and recommendations  
12  
from the 89-3 focused rotation.

The rotation focused on the technical gunnery aspects of a tank platoon and included both offensive and defensive operations. The briefing highlighted basic problems in crew performance and training levels involving basic  
13  
crew skills. There were few technical gunnery problems.

**\* USAARMC Direct Fire Study (NTC rotation 89-12):**

This USAARMC study includes two papers and a summary briefing. All three sources included live fire and ESX data discussion.

The first paper summarized the collection instruments used during the 89-12 focused rotation, but did not include findings or conclusions. The paper did provide background information necessary for analysis of the results.<sup>14</sup>

The second paper summarized the study team observations and recommendations from the 89-12 focused rotation, and specifically addressed problems in planning, preparation, and execution of direct fire operations for both the defense and the offense.<sup>15</sup>

The briefing summarizes the two USAARMC focused direct fire rotations (89-3 and 89-12). The briefing highlights individual training problems and leader planning, preparation, and execution problems involving direct fire operations at company and platoon levels.<sup>16</sup>

**\* NTC NCO Support Channel Reports (87 & 88):** These reports discuss specific NCO and individual soldier performance observations. These observations identify NCO and individual training and execution shortfalls that affect direct fire operations.<sup>17</sup>

\* **Fratricide Study (RAND 86):** This study covers seven rotations. This is an in-depth analysis of the causes of fratricides<sup>18</sup> at the NTC. The study highlights that fratricides destroy about one percent of the vehicles during a battle. In addition, fire control and planning problems<sup>19</sup> contribute to these fratricide problems.

\* **NTC Direct Fire Data Base (85-89):** This is not a specific report, but the raw NTC data involving direct fire statistics. Some of this data was used in the preparation of graphs for this MMAS study.<sup>20</sup>

\* **NTC Take Home Packages (FY 89):** NTC take home packages provide O/C comments involving unit performance and problems. A summary of these comments indicate problem areas in each of the identified criteria.<sup>21</sup>

#### APPLICABLE DOCTRINAL MANEUVER AND TRAINING MANUALS

"... to be useful, doctrine must be uniformly known and understood."

<sup>22</sup>  
FM 100-5

**Research Question 3.** Do current U.S. Army doctrinal manuals provide sufficient discussion involving this direct fire criteria?<sup>23</sup> Do shortfalls or discrepancies exist?

Identification and review of applicable manuals is the first step in answering this question. At the task force level the primary manual is FM 71-2, The Tank and Mechanized Infantry Battalion Task Force. Other manuals that interface with FM 71-2 direct fire discussions include: ARTEP 71-2-MTP, Mission Training Plan for The Tank and Mechanized Infantry Battalion Task Force, FM 71-1, Tank and Mechanized Infantry Company Team, FM 17-15, Tank Platoon and FM 7-7J, The Mechanized Infantry Platoon and Squad<sup>24</sup> (Bradley).

A review of these manuals identified numerous shortfalls and discrepancies both within and between manuals.<sup>25</sup> Specific shortfalls appear in Appendix B-2 and B-3. A summary of the major shortfalls follows:

- \* FM 71-2 limits its discussion involving direct fire planning to the positioning of units and their direct fire systems, and fails to emphasize or fully develop the remaining direct fire considerations as part of the offensive scheme of maneuver (e.g. purpose for fires, command and control, fratricide, etc.).<sup>26</sup>

- \* All manuals specifically limit direct fire planning to "hard" intelligence or do not discuss offensive direct fire planning considerations. [Note: Lack of "hard" intelligence will limit the confirmation and refinement of the plan. It will also increase the importance of the

reconnaissance and surveillance plan. It should not limit the plan or the planning process. On the contrary, it will probably increase the planning options and considerations to assist the commander in maintaining flexibility and control].<sup>27</sup>

\* FM 71-2 contains a limited discussion on tactics, techniques and procedures (TTP) for offensive direct fire operations. However, there is some direct fire TTP in the defensive chapter that also is applicable to offensive operations.<sup>28</sup>

\* The ARTEP 71-2-MTP does not include a condition statement or subtasks that evaluate a unit's performance against a "deliberate defense," "strongpoint," or "urban area defense."<sup>29</sup>

\* FM 71-2 and ARTEP 71-2-MTP fail to designate the person or persons responsible for the integration of direct fire systems into the active air defense plan.<sup>30</sup>

\* Company and platoon level manuals discuss active air defense in terms of reaction drills. The manuals do not discuss the planning considerations necessary to integrate direct fire systems into their active air defense roles.<sup>31</sup>

The review process also identified numerous discrepancies between these manuals. Specific discrepancy comments are in Appendices B-2 and B-3. A summary of major discrepancies indicate:



\* There is no common organization or format between  
these manuals.<sup>32</sup> This discrepancy makes discussion linkages  
between manuals difficult to identify.

\* Many tasks identified in FM 71-2 do not match  
those in the ARTEP 71-2-MTP. In addition, there are tasks<sup>33</sup>  
in ARTEP 71-2-MTP not discussed in FM 71-2.

\* Each manual establishes tasks that must be per-  
formed by its subordinate units. The subordinate unit's<sup>34</sup>  
manual often fails to discuss the same tasks.

\* Each manual has different techniques and proce-  
dures for the same or similar tasks. These differences can<sup>35</sup>  
cause confusion and misunderstanding.

\* All the manuals use terms not listed or defined<sup>36</sup>  
in FM 101-5-1 Operational Terms and Symbols. use terms in  
a different context and meaning than outlined in FM 101-5-<sup>37</sup>  
1, or use terms that have no definition in any manual.<sup>38</sup>

Additional manual review findings indicate:

\* The company and platoon manuals have a signifi-  
cant amount of direct fire discussion, but most of the  
discussion does not occur in the offensive chapter. The  
concepts and TTP are transferable to offensive operations at<sup>39</sup>  
the task force level.

\* The company and platoon manual's offensive direct  
fire discussion and emphasis is on battle and reaction<sup>40</sup>  
drills.

## UNIT SOPs

**Research Question 4.** Do current unit SOPs provide sufficient discussion about this direct fire criteria? Do shortfalls or discrepancies exist?

This MMAS thesis discusses thirteen separate Infantry and Armor task force standard operating procedures (SOP), playbooks, and battlebooks. These references range from 1983 to 1989. They include European, U.S. and standardized school publications.<sup>41</sup> Listed below is a general review of the findings. A complete review is in Appendix B-4.

- \* All unit publications contained little to no discussion specifically involving offensive direct fire operations.<sup>42</sup>

- \* A majority of the units' publications, especially playbooks, and battlebooks, show an increased discussion on direct fire TTP. However, most of the discussion focuses on defensive operations.<sup>43</sup>

- \* Most of the publications emphasize planning, command and control for the movement aspects of the scheme of maneuver. They do not adequately address the direct fire aspects of the scheme of maneuver.<sup>44</sup>

- \* Most of the publications emphasize battle drills for offensive direct fire operations.<sup>45</sup>

\* Unit publications discuss reaction drills and not planning and integration considerations for the direct fire systems in the active air defense role.<sup>46</sup>

\* All of the publications contain terminology problems similar to those discussed in the doctrinal manuals.<sup>47</sup>

### TERMINOLOGY

Identification of numerous terminology discrepancies occurred in all three type publications. These discrepancies included undefined terms, different term definitions between manuals, and different terms used for the same action. These discrepancies are sufficient in quantity and content to cause confusion and misunderstanding at all levels. Full discussion of terminology discrepancies is in the analysis portion (chapter 4) of this paper.

## CHAPTER TWO

### ENDNOTES

1. This study's appendices play a major role in reviewing and analyzing a large quantity of material. Specific discussion point endnotes will reference these appendices and the original sources for representative examples. Readers are encouraged to conduct their own review and analysis of the attached references.

2. "NTC Direct Fire Briefing." Ft. Irwin, California, briefing was prepared by the NTC Observation Division (NOD) for the commanding generals briefing at the 1989 Infantry and Armor Conferences. Copies of the briefing are on file at the NOD and the Center for Army Lessons Learned.

3. Huba Wass de Czege, BG., "Understanding and Developing Combat Power," (MMAS thesis, School for Advanced Military Studies, Fort Leavenworth, Kansas, 10 February 1984). This is an excellent study on combat power. Development of the criteria list in Appendix A parallels that used by BG Wass de Czege in his development of combat power variables. However, this study specifically focuses on the direct fire element of combat power.

4. "Sub-BOS Framework." draft report completed by the Center for Army Lessons Learned, 1989. The report forms the basis for further studies by CALL and BDM. The term Sub-BOS is fully defined in Chapter One's definitions section page 7.

5. U.S. Department of the Army, Operations, Field Manual 100-5. (Washington, D.C.: Government Printing Office, 1986). p.6.

6. NTC is unique in that it forces task force commanders to fight a thinking enemy with weapons that simulate actual systems and results. It also forces commanders to plan and fight on an unrestricted, highly automated, live fire battlefield. This battlefield allows units to employ the systems that they would actually use in combat. Although there are limitations to the scenario and battlefield replication, a task force commander and his subordinates still receive a scenario that comes as close to replicating combat within the constraints of a peacetime situation. A side benefit of this combat situation is the capability for commanders and the Army to measure planning, preparation, and execution results. From these results,

commanders and Army institutions can identify problems, draw conclusions, and develop solutions before actual battlefield operations begin. Therefore, NTC studies and observations provide a credible source for this MMAS thesis' review and analysis process.

7. The bibliographic essay format was used to assist in reviewing and analyzing a large quantity of direct fire information. Chapter Three, page 47 specifically discusses the format used to develop each essay.

8. "NTC Observation Division Combined Arms Assessment Team Report: Planning, Preparation and Execution of Direct Fire Operations at the National Training Center." report submitted to CALL, Ft. Leavenworth Ks., 1985, p. 52, and Appendix C-1, page C-3.

9. Ibid, p. 52-53, and Appendix C-1, page C-3.

10. "Direct Fire Collection Plan Results." Ft. Leavenworth Kansas, briefing prepared by the Center for Army Lessons Learned (CALL) to address findings of a six rotation study conducted from 1987 to 1988. Also reference Appendix C-2, page C-7.

11. "USAIS Direct Fire Capability, Modernized Force Assessment: 'MILES vs. TOW Missile' Excursion, NTC Rotation 88-7." briefing slides developed by USAIS to highlight the results of the study. No date given. 53 pages. Also reference Appendix C-3, page C-11.

12. "USAARMC Observation Team Gunnery Special Focus Rotation, NTC Rotation 88-4," briefing slides developed by USAARMC to outline rotational objectives and methodology. It does not include findings or results. No date given. (Note: Focused rotation changed from 88-4 to 89-3) 15 pages. Also reference Appendix C-4, page C-14.

13. "USAARMC Tank Direct Fire Focused Rotation 89-3 --Observations and Recommendations," briefing slides developed by USAARMC to highlight the results of the study, No date given. 30 pages. Also reference Appendix C-4, page C-14.

14. "Initial Company Collection Instrument Observations, Tactical Direct Fire Rotation, NTC Rotation 89-12," paper developed by USAARMC to outline rotational objectives and methodology. Does not include findings or results. No date given. 29 pages. Also reference Appendix C-5, page C-18.

15. "Tactical Direct Fire Study Team Rotation 89-12 --Observations and Recommendations," paper developed by USAARMC to highlight the results of the study, No date given. 5 pages. Also reference Appendix C-5, page C-18.

16. "USAARMC Direct Fire Issues, NTC Rotations 89-3/89-12 Armor School Direct Fire White Paper," briefing developed by USAARMC to highlight the results of the study, date given. 12 pages. Also reference Appendix C-5, page C-18.

17. This discussion was taken from the following three NTC NCO Support Channel reports. "1987 Summary," 7 pages, "1st Qtr 1988," 3 pages, "2nd Qtr Summary," 3 pages. These unpublished reports are provided to CALL for their lessons learned data base. Also reference Appendix C-6, page C-23.

18. For purposes of this study, "fratricide" is defined as "fire upon friendly units, personnel, or equipment." This definition was taken from a study prepared by Martin Goldsmith. It was entitled "Applying the National Training Center Experience Incidence to Ground-to-Ground Fratricide," RAND, (Santa Monica, California: The RAND Corporation, February, 1986). p. iii.

19. Martin Goldsmith, "Applying the National Training Center Experience Incidence to Ground-to-Ground Fratricide," RAND, (Santa Monica, California: The RAND Corporation, February, 1986). Also reference Appendix C.

20. This data base exists on computer software at NTC and CALL. This data base was reviewed but not specifically used in this study. The data base was used to develop the Infantry and Armor Conference briefing graphs. Data base graphs are used in this MMAS study. Reference chapter one, figures 1-1, 1-2, and 1-3.

21. This is a summary of the FY 89 NTC take home packages. These packages are on software stored at CALL and ARI. Chapter Three describes the methodology for analysis. Also reference Appendix B-1, page B-1-B-1.

22. U.S. Department of the Army, Tank and Mechanized Infantry Battalion Task Force, Field Manual 71-2. (Washington, D.C.: Government Printing Office, September 1988). p. 3-27.

23. For this study FM 71-2, FM 71-1, FM 17-15, FM 7-7J and ARTEP 71-2-MTP will be considered doctrinal manuals.

24. FM 17-15 and FM 7-7J were included in this task force level review for the following reasons. First, task forces conduct planning looking two levels down (platoon level). Therefore discussions involving platoon level tasks and requirements could appear in FM 71-2. This study reviewed for these requirements and a similar discussion in the platoon manuals. Second, NTC studies indicate major direct fire problems at the platoon level. Therefore, it was important to determine if there may be a doctrinal breakdown from task force to platoon that may be the cause of these problems.

25. In this case, "shortfalls" describes a failure by the manual(s) to discuss or address a specific point that is important to direct fire operations. "Discrepancies" are differences between similar discussions both in and between manuals. Reference general definition in Chapter Two pages 8 and 13.

26. This summarizes numerous representative examples. Some specific task force level examples include the scheme of maneuver discussion on page 3-23 or Appendix B-2 page B-2-B-12. FM 71-2 lack of discussion involving direct fire control measures in the offensive chapter (three) is another example (reference page 3-39 or Appendix B-2 page B-2-B-17). A final example involves all the schematic diagrams in chapter three. The majority of these diagrams contain no direct fire control measures.

27. FM 71-2 limits fire planning (and it is unclear if it is direct or indirect) to the limit of a units reconnaissance, page 3-53. FM 71-1 and FM 17-15 do not specifically address direct fire planning considerations, although discussion does allude to the need to fire plan some aspects. FM 7-7J specifically states that fire planning should "rely more on fire commands and prearranged SOP signals...", page C-15. An additional comment: units do not achieve flexibility by not planning. Identification of several enemy course of actions and the establishment of control measures or specific actions to counter these possible enemy courses of actions achieves flexibility while still maintaining control. Good reconnaissance also assists in refining and adjusting a direct fire plan.

28. A representative example of this shortfall is in FM 71-2 page 3-54, paragraph 3-25 "Techniques for the Deliberate Attack." This paragraph's discussion focuses on movement and not direct fire considerations. These manuals also discuss TTP considerations for the positioning and some for the employment of direct fire systems, but they all fail to

discuss TTP for command and control of direct fires. Reference footnote 26 above.

29. The most difficult OPFOR defensive condition is a hasty defense. Reference ARTEP 71-2-MTP, task #7-1-3007 "Assault," on page 5-27 and Appendix B-3 page B-3-B-2.

30. For example, reference FM 71-2, "Air defense artillery officer," page 2-7, or Appendix B-2, page B-2-B-2 and Section V "Air Defense Support," pages 6-24 through 6-28, or Appendix B-2, pages B-2-B-24. Also reference ARTEP 71-2-MTP, Task #7-1-3911, "Perform Air Defense Operations," page 5-140, or Appendix B-3, page B-3-B-12. Comment: Direct fire systems can play a significant role in enhancing the active air defense response if they are properly integrated with the air defense systems. Planning this integration with the designation of direct fire control measures (e.g. TRP) on likely enemy air avenues of approach can enhance response time (because the air guards are oriented on the designated TRPs) and the command and control aspects to achieved massed fires.

31. For example, reference FM 71-1, Section IV, "Active Air Defense Measures," page 6-37,8; FM 17-15, page 3-21 thru 3-23 and FM 7-7J Appendix F. Comment: Active air defense planning and integration is more important at the company and platoon level during offensive operations than during defensive operations. During the defense, air defense systems are normally under the control of the task force air defense officer. During the offense, air defense systems are normally dispersed (especially Stingers) to companies and platoons. Direct fire systems in active air defense operations play two major roles in the offense: First, they provide immediate response while the Stinger gunner, who is normally inside a vehicle deploys his system. Second, it increases the Stinger gunner's survivability by giving the enemy air two threats to worry about.

32. To highlight this discrepancy reference the table of contents for FM 71-2, page i-iii and FM 71-1, page i. Paragraph organization is also dissimilar, reference FM 71-2, page 3-1 and FM 71-1 page 3-1. This lack of a standardized organization and format may be a major factor in the discrepancies between these two manuals.

33. For example, FM 71-2 discusses specific tasks involving the "Attack of a Strongpoint" on page 3-58. ARTEP 71-2-MTP does not have a similar task or a condition. Another example, FM 71-2, during consolidation phase, requires units to "plan fires once in position, Company commanders and platoon leaders verify TF TRPs and designate



sectors of fire to control fires," page 3-38,9. ARTEP 71-2-MTP does not require the same tasks, page 5-68. On the reverse side the MTP discusses specific tasks for an "Attack-by-fire" task (page 5-30) that is not discussed in FM 71-2. Also reference Appendix B-3 page B-3-B-4.

34. For example, FM 71-2 discusses "Company Team Missions in the Attack," page 3-27, while FM 71-1 discusses "Types of Operations," but not missions.

35. For example, FM 71-2 discusses "four phases" of a night attack on page 3-32. FM 71-1's discussion of limited visibility considerations on pages 3-37 to 3-39 does not discuss these same four phases. A platoon level example involves the platoon level fire plans. FM 17-15's fire plan on page 4-18 has different marginal data and other requirement than FM 7-7J's platoon sector sketch on page 6-11. These differences make it difficult at company/team level to consolidate platoon direct fire plans.

36. Appendix D of this study contains two sections on terminology discrepancies. Section I lists terms defined in FM 101-5-1 but have different definitions or usage in other manuals. Section II lists terms not defined in FM 101-5-1 but are used in the doctrinal manuals.

37. For example, both FM 71-1 (page 3-12) and FM 71-2 (page 3-26) use the term "Support-by-Fire." The term is not defined in FM 101-5-1 or in FM 71-1. A graphic symbol discrepancy example involves the symbol for the "Attack-by-fire position." The symbol is not shown in FM 101-5-1 but it is shown in FM 71-2, page 3-42. The same symbol is used in FM 71-1, page 3-4 to represent an "Overwatch position." In addition FM 71-2 states that "Overwatch positions are usually indicated graphically as checkpoints," page 3-41. Reference Appendix D section II for a complete list of terms not defined in FM 101-5-1 but are being used in the doctrinal manuals.

38. For example the term "Fire(s)" is used throughout the manuals. Sometimes it refers to both direct and indirect fires, for example FM 71-2, page 3-23. In other cases, it refers to just one or the other (normally indirect), for example FM 71-2 page 3-24. In other cases it is unclear as to which type that it is referring, thus causing confusion, for example FM 71-2, page 3-35. Another less obvious term is "Close Overwatch." This term is used in FM 71-2 on page 3-33. Reference Appendix D section II for a complete list of undefined terms.

39. Although the use of direct fire systems is discussed in greater detail in the lower manuals, there is still a lack of adequate direct fire command and control discussion. For example, reference FM 71-1's use of diagrams, page 2-10 and its discussion on fire and movement on page 3-23. The fire discussion is in much greater detail than FM 71-2 but it still lacks a discussion on how to control fires. "Assigning a position to fire from" is not controlling direct fires, but it is controlling the movement of systems to put them in a position to employ direct fires. Positioning is only one aspect of employing fires. Determining which system should be used, how they should be used and finally how they can be controlled are the other aspects of employing fires. These are the aspects that are missing in the manuals. The lack of direct fire command and control in the offensive schematics highlights the same problem with the platoon level manuals. [Note: This does not mean that direct fire command and control (C2) is not in the doctrinal manuals. Direct fire C2 is discussed in general (for example, FM 71-2, page 2-34) and in the defensive chapters. It is just not discussed or emphasized in the offensive chapter.]

40. The manuals do not specifically limit offensive direct fire actions to battle drills. However, the manuals examples tend to emphasize reaction direct fire concepts and not preplanned/prepared direct fire actions. For example, FM 71-1, p3-23, and FM 7-7J, p. C-15.

41. First, unit designations were specifically deleted for non-attribution reasons. All references to these SOPs were taken from Appendix B-4. Second, timeframe and location variances was an attempt to achieve a representative example of unit SOPs that would have been used at the NTC during this study timeframe. European (U.S. Army) SOPs were reviewed to see how their discussion on direct fire differed from that of CONUS units. Although not important to this study, CONUS unit SOPs appear to be more comprehensive in the area of TTP's.

42. The SOPs and other unit products do discuss direct fire considerations in general and during defensive operations. This emphasis parallels to a lesser degree the discussion that appears in the company and platoon level manuals. Reference Appendix B-4 for representative examples.

43. For example, reference Appendix B-4, SOP b, page B-4-B-1.

44. For some representative examples reference Appendix B-4, SOPs b, page B-4-B-1, h, page B-4-B-7, and i, page B-4-B-8.

45. For example, reference Appendix B-4, SOP f, "offense" section, page B-4-B-5.

46. For example, reference Appendix B-4, SOP b paragraphs 2e, 3h, and annex b paragraph 11, pages B-4-B-1, and SOP m, annex p, page B-4-B-11.

47. For example, Appendix B-4, SOP g, appendix 3 to annex x, "Attack-by-fire," page B-4-B-7 and SOP m, appendix 5 to annex C, page B-4-B-11.

## CHAPTER III

### METHODOLOGY

To become both wise and courageous one must acquire a method, a method to be employed in learning as well as in applying what has been learned.

1

- Mao Tse-tung

Study Design. This MMAS thesis was designed to answer the contributing questions addressed in the introduction. Outlined below are the specific methods and procedures chosen to answer these questions.

Research Question 1. What are the measurable criteria involving the employment of direct fire systems during offensive operations?

This thesis applied the following procedures to answer this question:

Establish or Identify Offensive Direct Fire Criteria

(Appendix A-1): Chapter Two identified the three sources (NTC Infantry and Armor Conference Briefing, BG Wass de Czege's paper, and Sub-BOS study) used to develop the offensive direct fire criteria. Information in these sources provided a list of considerations that could affect the conduct of direct fire operations. Refinement and staffing of these considerations produced the offensive direct fire criteria listed in Appendix A-1.

**Limit Criteria to Scope of Study** (Appendix A-2):

This MMAS thesis could not adequately discuss all of the identified criteria. Therefore, the execution and intelligence related criteria are not reviewed here. The final MMAS thesis criteria is in Appendix A-2. [Note: The decision to drop the other criteria in no way limits their importance.]

**Define Criteria** (Appendix A-3): Definitions for the criteria were developed using the following sources:

- \* Discussions in the original three sources.
- \* Discussions in maneuver and training manuals.<sup>4</sup>
- \* Discussions from other studies.<sup>5</sup>
- \* Author's personal experiences.<sup>6</sup>

The definitions were then staffed through CALL, former brigade and battalion commanders, and NTC personnel. Development of the final definition list included the reviewer's staffing recommendations. The final list of definitions is in Appendix A-3.<sup>7</sup> [Note: Full understanding of the criteria definitions is critical to the analysis portion of this paper.]

**Role of Criteria:** The criteria allow the comparison of direct fire studies, doctrine and unit SOPs by providing a common analysis base. Answers to the remaining research questions were structured around this base.

**Research Question 2.** Do current studies and NTC direct fire data identify performance failures when compared against the identified direct fire criteria?

This MMAS thesis applied the following procedures to answer this question:

**Identify/Review Current Studies** (Appendix C): Chapter Two discusses the current applicable studies. A bibliographic essay was prepared for each study. Each essay includes:

- \* Study Title.
- \* Author or Organization.
- \* Study Timeframe.
- \* Purpose.
- \* Study Scope or Methodology.
- \* Report Conclusions and Criteria Summary.

The conclusions portion of the essay is extracted study comments that referenced or applied to the established offensive direct fire criteria. These comments were consolidated in the same order as the criteria to simplify the review and analysis process. Non-criteria direct fire comments were gathered under the title, "Major Report Con-<sup>8</sup>clusions (Not Directly Related to the Criteria)."

Current Studies Data Collection Worksheets: Two worksheets were developed to assist in the review and analysis process.

Studies Analysis and Rating Summary Worksheet  
(Appendix B-1-A): This worksheet arranged all study comments by criteria. A rating was assigned to each comment using the following rating scheme.

### STUDY RATINGS AND DEFINITIONS

- 3 - OPTIMAL - Offensive direct fire criteria are understood and consistently applied on the NTC battlefield, and if the study addresses execution results, when the unit applied the criteria, they applied it effectively.
- 2 - ADEQUATE - Offensive direct fire criteria concept is understood but not consistently applied, and if the study addresses execution results, when the unit applied the criteria, they applied it effectively.
- 1 - PROBLEMS - Offensive direct fire criteria concept is not understood and not consistently applied, and if the study addresses execution results, and when the unit applied the criteria, they did not apply it effectively.

0 - NOT ADDRESSED - Studies did not address or observe this criteria.

O/C Analysis and Rating Summary Worksheet (Appendix B-1-B): This worksheet compared O/C take-home comments for FY 89 rotations with the established criteria. General comment areas rather than specific comments, reduced the large number of O/C comments to a manageable format. The worksheet was eight columns, and the definitions for the eight columns appear below:<sup>9</sup>

\* Overall Rating (0-3) - This is a subjective rating based on the previous definitions of study ratings.

\* Understood - This column totals the O/C comments that indicate the unit understood the criteria intent or concept.

\* Not Understood - This column totals the O/C comments that indicate the unit did not understand the criteria intent or concept.

\* Consistently Applied - This column totals the O/C comments that indicate the unit consistently applied the criteria intent or concept.

\* Inconsistently Applied - This column totals the O/C comments that indicate the unit inconsistently applied the criteria intent or concept.



\* Not Applied - This column totals the O/C comments that indicate the unit did not apply the criteria intent or concept.

\* Effectively Applied - This column totals the O/C comments that indicate when the unit applied the criteria intent or concept, they applied it effectively.

\* Not Effectively Applied - This column totals the O/C comments that indicate when the unit applied the criteria intent or concept, they did not apply it effectively.

**Research Question 3.** Do current U.S. Army doctrinal manuals provide sufficient discussion involving the indirect fire criteria? Do shortfalls or discrepancies exist?

This MMAS thesis applied the following procedures to answer this question:

**Identify Appropriate Maneuver and Training Manuals:**

Chapter Two identifies the task force related manuals used in the review and analysis portion of the thesis.

10

**Maneuver and Training Manuals Collection Worksheets**

(Appendices B-2, B-3): This MMAS thesis used two worksheets to analyze the identified maneuver and training manuals (two worksheets for each type of manual).

**Maneuver Manual Extract and Analysis Worksheet** (Appendix B-2-B): This worksheet allowed the review of the maneuver manual (FM 71-2) for direct fire comments, shortfalls and discrepancies. The worksheet lists the

extracted direct fire comments by chapter, section, and paragraph order on the left side of the worksheet. Manual comments that specifically address or "allude to"<sup>11</sup> the identified criteria were marked by the appropriate criteria<sup>12</sup> sequence number on the right side of the worksheet.

Discrepancy and shortfall comments were also listed across from the extracted comment. Each discrepancy or shortfall was rated as either a major or minor problem (see the definitions for major and minor problems on the following pages). FM 71-1, FM 7-7J, and FM 17-15 were reviewed for direct fire criteria comments. A summary of these comments<sup>13</sup> appear at the end of the worksheet.

#### Training Manual Extract and Analysis Worksheet

(Appendix B-3-B): Before completing the worksheet, the training manual (ARTEP 71-2-MTP) was reviewed for those mission training tasks that specifically applied to offensive operations. These tasks appear on the first page of the worksheet. Using the same basic procedure as that used for FM 71-2, direct fire comments were extracted and written on the left side of the worksheet. These extracted comments were then reviewed for criteria-related comments, shortfalls, and discrepancies. Identified analysis comments (criteria sequence numbers, major and minor problems) were then noted on the right side of the worksheet. The training manual was reviewed only against FM 71-2. No lower

level maneuver manuals (FM 71-1, FM 7-7J, FM 17-15) were used in this analysis.

Maneuver and Training Manual Criteria Rating

Summary Worksheet (Appendices B-2-A, B-3-A): This MMAS thesis summarized the worksheet comments by direct fire criteria. It then assigned an overall rating for each criteria. Listed below are the definitions used to evaluate the manuals:

MANUAL RATING DEFINED:

- 3 - OPTIMAL - The manual specifically addresses the offensive direct fire criteria. It contains no major internal or external discrepancies between manuals. In addition it also includes:
  - TTP on how to accomplish the criteria.
  - Standards or desired results for the conduct or achievement of the criteria.
- 2 - ADEQUATE - The manual does not specifically address the offensive direct fire criteria; however, material may allude to the criteria. The basic concepts may be understood or could be derived, but the wording, explanation, or discussion does not make it clear. (For example, the manual may discuss intent but it may not specifically address intent for offensive direct fires.) It

also may contain minor internal or external discrepancies between manuals, but no major ones. In addition, the writings also include:

- TTP on how to accomplish the discussed criteria.
- Established standards or desired results for the conduct or achievement of the discussed or alluded-to criteria.

1 - PROBLEMS - The manual may specifically address or allude-to the offensive direct fire criteria but it does not include:

- Does not include TTP on how to accomplish the criteria.
- Does not include established standards or desired results for the conduct or achievement of the criteria.
- Contains major internal or external discrepancies between manuals.

0 - NOT ADDRESSED - Manual does not discuss or allude to the offensive direct fire criteria.

#### MAJOR AND MINOR DISCREPANCY DEFINITIONS

Major Discrepancy - A subjective evaluation of mistakes between or within manuals that lead to

confusion and will hinder achievement of the criteria.

**Minor Discrepancy** - A subjective evaluation of mistakes between or within manuals. However, these mistakes do not lead to confusion and will not hinder achievement of the criteria.

**Research Question 4.** Do current unit SOPs provide sufficient discussion involving the identified direct fire criteria? Do shortfalls or discrepancies exist?

This thesis applied the following procedures to answer this question:

**Identify, Collect, Review and Analysis Unit SOPs:**

Chapter Two discusses the identification and collection of the unit SOPs. <sup>14</sup> Two worksheets were used to assist in the analysis of these SOPs.

**SOP Extract and Analysis Worksheet** (Appendix B-4-B): This worksheet was developed using the same techniques as those used for the maneuver and training manual worksheets.

**SOP Criteria Rating Summary Worksheet** (Appendix B-4-A): This worksheet uses the same procedures as those used for the maneuver and doctrinal manuals. The rating definitions are also the same (substitute "SOP" for "Manual").

**Research Question 5: Do current unit training practices include the identified direct fire criteria? Do shortfalls exist?**

During the review and analysis of current studies, unit SOPs, and the task force training manual, an attempt was made, within the capabilities and delimitations of this study--to identify unit training practices. Unit training shortfalls specifically mentioned in the current NTC studies were included in the bibliographic essay (Appendix C) and the studies analysis and rating summary worksheet (Appendix B-1-A). Identification of training practices based on manuals and SOPs required several assumptions:

- \* First, if a criterion is not adequately discussed in the manuals or it has problems, and if current studies do not specifically indicate there is a training problem, then it was considered a manual or doctrinal problem.

- \* Second, if a criterion is adequately discussed in the manuals doctrine, and current studies indicate there are still performance problems, then it was classified as a unit training problem.

- \* Third, if a criterion is not adequately discussed in the manuals or it has problems, but an adequate discussion appears in the unit's SOP, and current studies highlight a performance problem, then the problem is a unit training problem.

\* Fourth, a combination of these situations can also produce a conclusion that both manuals and unit training practices affect the proper performance of the direct fire criteria.

This analysis process occurs during the discussion of each criteria in Chapter Four. A summary of the process appears on the last page of Chapter Four.

15

**Research Question 6** How do the shortfalls the identified in questions (if any) compare with each other? (trends, similarities, differences)

This MMA thesis applied the following procedures to answer this question:

**Graphic Comparison** (Reference chapter 4 - Analysis):

This MMAS thesis used a graphic model to compare findings from the studies, maneuver manuals, training manuals, and unit SOPs. This model helped in the analysis portion by graphically highlighting criteria problems. Using the rating schemes discussed earlier, the graphic model showed the review ratings for each criteria.

**Analysis Process:** Using the model and the attached worksheets, each area (studies, manuals, SOPs) rating was analyzed for its comments, discrepancies, and shortfall affects on the performance of the direct fire criteria. This analysis process was conducted by criteria. A short

summary of the process appears at the beginning of each  
16  
criteria analysis section.

**Research Question 7** What effect do these shortfalls  
have on the effective employment of direct fire  
operations during the offense? Are they  
significant?

This MMAS thesis could only provide a subjective  
17  
answer to this question. Further studies that  
specifically measure this effect will be necessary to obtain  
an objective answer. The subjective answer to this ques-  
tion appears in the analysis and conclusion chapters.

**Data Collection instruments and procedures.** Data collection  
will be based on the previously discussed worksheets.

**Data Collection Methods.**

- \* CALL and NTC approved the use of NTC Direct Fire  
data.

- \* Unit SOPs were collected from the following  
sources: Personal collections, CARL, CALL, and unit visits.

- \* Personal observations from a three year tour at  
the NTC.



## CHAPTER THREE

### ENDNOTES

1. Extracted from a paper by Wass de Czege, Huba, BG, "Understanding and Developing Combat Power," He wrote the paper while he was Director of the School for Advanced Military Studies, 10 February 1984. p. 1. He did not cite an original source.

2. Reference Chapter Two page 29 and Appendix A. These sources were chosen for the following reasons:

- \* Each specifically addressed direct fire considerations.

- \* Infantry/Armor Conference briefings highlighted NTC's position on direct fire problems and direct fire considerations. The Infantry and Armor Schools have also accepted the validity of the majority of the problems and recommendations briefed.

- \* Combat Power study is recognized as a viable academic study identifying variables that specifically apply to combat power.

- \* Sub-BOS is based on the CALL data base. This data base has undergone an extensive military and civilian review and analysis process.

3. The refinement process involved elimination of all discussion not related to direct fire operations. The discussion was then reduced to a single phase. This list was then staffed through CALL, former brigade and battalion commanders, and NTC personnel. The final criteria was developed on this staffing process.

4. This thesis delimited its review to the offensive chapters and tasks in task force and below manuals. There are numerous discussions involving the criteria in other chapters and other manuals not used in this study. (e.g. gunnery manuals. Definitions for some of the criteria are based on a compilation of these other chapters and manuals discussion.

5. For example, Major Bogdan developed a list of definitions for different types of rehearsals (reference page A-3-5,6). This thesis used a portion of this list and expanded on the concept with additional definitions for other types of rehearsals.

6. Numerous professional discussions between O/C's, player unit personnel, and senior Army leaders provided a background for the development of an appropriate criteria definition. The majority of the definitions were developed using three sources.

7. This definition list is not designed to be the "right" answer. Establishment of a definition was necessary to conduct further analysis. These definitions formed the basis for determining if a particular criteria was specifically addressed or only alluded to.

8. These additional comments did not specifically apply to the criteria, but did discuss direct fire operations (eg. defensive direct fire operations). They are included for information purposes only, for those readers who may be interested in all aspects of the summarized study.

9. This summation and generalization of O/C comments was necessary for the following reasons.

- \* First, the large volume of comments (hundreds) could not all be listed in this thesis.

- \* Second, each O/C comment is situation dependent. Therefore only trends and general conclusions were possible.

I chose this consolidation method for the following reasons.

- \* First, it is possible to identify trends, that supersede situational dependency based on the large number of comments.

- \* Second, this method can better portray the general criteria problems then a listing of individual comments.

10. See Chapter Two pages 31-34.

11. In reviewing the three source areas (studies, manuals, SOPs) it became apparent that specific comments involving offensive direct fire were limited. However, there were more discussions in general terms that could

allude to this thesis' criteria. Therefore, it was important that these comments also be included in the study.

12. The criteria sequence number is taken from the number listed next to the criteria in Appendix A-2. For example, the first criteria on the list in Appendix A-2 is "Direct Fire Planning." Therefore, its sequence number is "1." If the extracted comment specifically addressed the criteria, the left side annotation would look like this:

"1(s)" where "(s)" means specifically addressed. If the extracted comment was only alluded-to then the annotation would look like this "1(a)" where "(a)" means alluded to.

13. FM 71-1, FM 7-7J, and FM 17-15 were not used in the summary manual sheet because the focus was on task force level operations. However, they were used in doing the subjective evaluation involving unit training versus manual problems. The extensive discussion of these criteria in the lower level manuals reinforce the validity of the criteria and tend to indicate a unit training problem and not a doctrine problem.

14. Reference Chapter Two pages 35 and 36.

15. This summary was provided to assist in identifying training versus doctrine problem areas.

16. This summary was designed to assist the reader in skimming Chapter Four, while still capturing the major points for each criteria.

17. This subjective answer is solidly based on the research and analysis conducted by this study. However, an objective solution may be necessary to fully substantiate the findings and answers to this question.

## CHAPTER IV

### ANALYSIS

...the modern tendency has been to search for principles which can each be expressed in a single word--and then need several thousand words to explain them. Even so, these 'principles' are so abstract that they mean different things to different men, and, for any value, depend on the individual's own understanding of war. The longer one continues the search for such omnipotent abstractions, the more do they appear a mirage, neither attainable nor useful--except as an intellectual exercise.

1

Liddell Hart--Strategy

### INTRODUCTION

This chapter analyzes the information collected during the review of literature. The analysis will focus on these questions:

\* Question 2: Do current studies and NTC direct fire data identify performance failures when compared against the identified direct fire criteria?

\* Question 3: Do current U.S. Army doctrinal manuals provide sufficient discussion involving the identified direct fire criteria? Do shortfalls or discrepancies exist?

\* Question 4: Do current unit SOPs provide sufficient discussion involving the identified direct fire criteria? Do shortfalls or discrepancies exist?

\* Question 5: Do current unit training practices include the identified direct fire criteria? Do shortfalls exist? (Answer is limited to an analysis of training doctrine and unit SOPs)

\* Question 6: How do the shortfalls identified above (if any) compare with each other? (trends, similarities, differences)?

\* Question 7: What impact do these shortfalls have on the effective employment of direct fire operations during the offensive? Are they significant?

## 2 CRITERIA ANALYSIS

Criteria analysis was conducted using a graphic model to compare findings from the studies, maneuver doctrine, training doctrine, and unit SOPs. The discussion following the graphic model addresses specific reasons for each rating. It also addresses criteria area strengths, problems, discrepancies, and shortfalls.

# DIRECT FIRE PLANNING (CRITERIA 1)

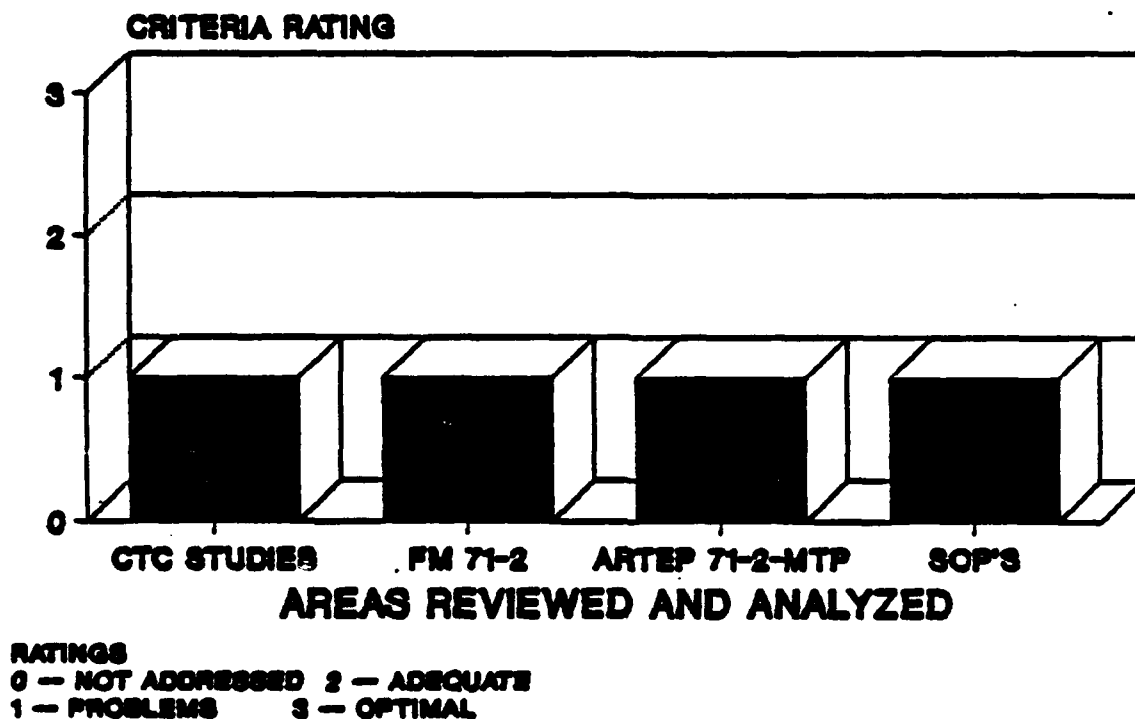


Figure 4-1

## Criteria 1: DIRECT FIRE PLANNING

**ANALYSIS SUMMARY** (Primary Problem Area: Doctrinal/TTP manuals):

NTC studies and observations indicate a lack of offensive direct fire planning at all levels. Unit direct fire results also highlight the existence of an offensive

direct fire problem. The planning problem appears to stem from a lack of emphasis and TTP in our doctrinal manuals. Current unit SOPs show an increased emphasis in this area, but the emphasis is on the use of battle drills and not on preplanned direct fire operations.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):<sup>3</sup>

A CALL direct fire briefing indicated that task forces developed an offensive direct fire plan only 12.1% of the time. Additional studies determined that, of those task forces that developed a direct fire plan, the commander and staff planning was poor, they did not consider fratricide aspects, and the direct fire plan did not always support the scheme of maneuver. O/C observations also suggest a clear lack of understanding by commanders and staff on the necessity to conduct direct fire planning. Planning emphasis and TTP is on movement and synchronization of other Battle Operating Systems (BOS) and not on direct fire operations. Most units leave direct fire planning to the platoon leader who, in turn, must plan to execute the appropriate battle drill.

FM 71-2 (Criteria Rating - 1 Problems):<sup>4</sup>

FM 71-2 contains general and defensive oriented TTP discussions involving direct fire planning. However, there

is a clear lack of emphasis and TTP in all the manuals in-<sup>5</sup>  
volving direct fire planning during offensive operations.

It is possible to interpolate the general and defensive  
direct fire TTP discussion to offensive operations, but as  
the studies indicate above, this does not normally occur.

This review also identified other doctrinal problems  
that can affect direct fire operations. First, there is a  
significant terminology problem within the manuals.<sup>6</sup> Sec-  
ond, lack of a standard organization or format between FM  
71-2 and the other manuals increase discrepancies in direct  
fire operations at the different levels.<sup>7</sup>

<sup>8</sup>  
ARTEP 71-2-MTP (Criteria Rating - 1 Problems):

The MTP "attack-by-fire" task has a good discussion  
involving direct fire operations. Unfortunately, the re-  
maining tasks fail to emphasize the same aspects. What  
discussion that does exist does not parallel the discussion  
in FM 71-2. The most significant problem is the "Condition"  
requirements. There is no MTP task that requires BLUEFOR  
units to plan or execute an attack against a "prepared  
defense," "attack against a strongpoint," or an "urban"  
defense. The most difficult attack condition is against a  
"hasty defense."<sup>9</sup> Without the requirement to train against  
these more difficult conditions, units will not allocate the  
necessary resources to conduct this training as part of  
their regular training exercises. They will also never



develop the techniques or skills necessary to execute these tasks during combat.

10

UNIT SOPs (Criteria Rating - 1 Problems):

Most task force SOPs emphasize the use of terrain index reference system (TIRS) for C2 and platoon battle drills for the conduct of offensive direct fire action. There is little discussion of task force level C2 and planning for offensive operations. However, there is extensive discussion of C2 and direct fire planning for defensive operations.

ADDITIONAL COMMENTS:

Failures involving direct fire offensive planning stem from the limited TTP discussions in the manuals. Most units and doctrine writers' understanding of the "maneuver" system may be the major reason for this shortfall in TTP discussion. Maneuver is defined by FM 101-5-1 as: "The movement of forces supported by fire to achieve a position of advantage from which to destroy or threaten destruction of the enemy."<sup>11</sup> Doctrinal manuals provide a detailed TTP discussion on conducting movement and on achieving a position of advantage ("Forms of Maneuver," "Movement Techniques and Formations," "Concept of the Operations...Maneuver," "Attack-by-Fire Positions," and other movement control

12  
measures). What is missing is the "action" portion of maneuver, and specifically the application of systems (direct, indirect, etc.) to "destroy or threaten destruction of the enemy." It appears that doctrine authors and commanders who assign maneuver tasks assume the reader and subordinate commander understand how to achieve the destruction portion of maneuver. NTC studies and observations indicate this is a miscalculation on the part of the authors.

The increased emphasis on the planning, preparation and execution for defensive direct fire operations highlight this faulty assumption. For example, earlier rotations at the NTC (1985) saw the limited use of target reference points (TRPs), construction of engagement areas (EAs), reconnaissance to confirm or deny battle positions and control measures, and rehearsals of their direct fire battle.

By 1989, unit SOPs, additions to FM 71-2, and other manuals show an increased TTP discussion on how to construct an engagement area, or position and control forces, and more importantly how to control fires. This increase in TTP was generated from an obvious lack of understanding on how to execute the destruction portion of the defensive scheme of maneuver.

Just assigning a battle position and a couple of control measures was no longer adequate. Instead, a de-

tailed plan that was well rehearsed and properly prepared was necessary to at least offer the opportunity for success. [Note: Total success is still predicated on crew and gunner performance. A well rehearsed plan--with supervised preparation--can limit gunner mistakes and misunderstandings, but it can't shoot the system.]

This emphasis for defensive direct fire operations has not been translated over to offensive operations. What is needed is more TTP on what a unit or gunner should do once he completes the movement phase of maneuver and now has to execute the destruction phase. Movement does not constitute action.

It should be recognized that an increase in offensive direct fire planning TTP may not solve the overall direct fire problem. Unit training, as illustrated for defensive operations, still has a significant impact on the conduct of direct fire operations. Regardless, units cannot begin to train if there is no consistent doctrine or TTP available by which to train-to.

# COMMANDER'S GUIDANCE (CRITERIA 2)

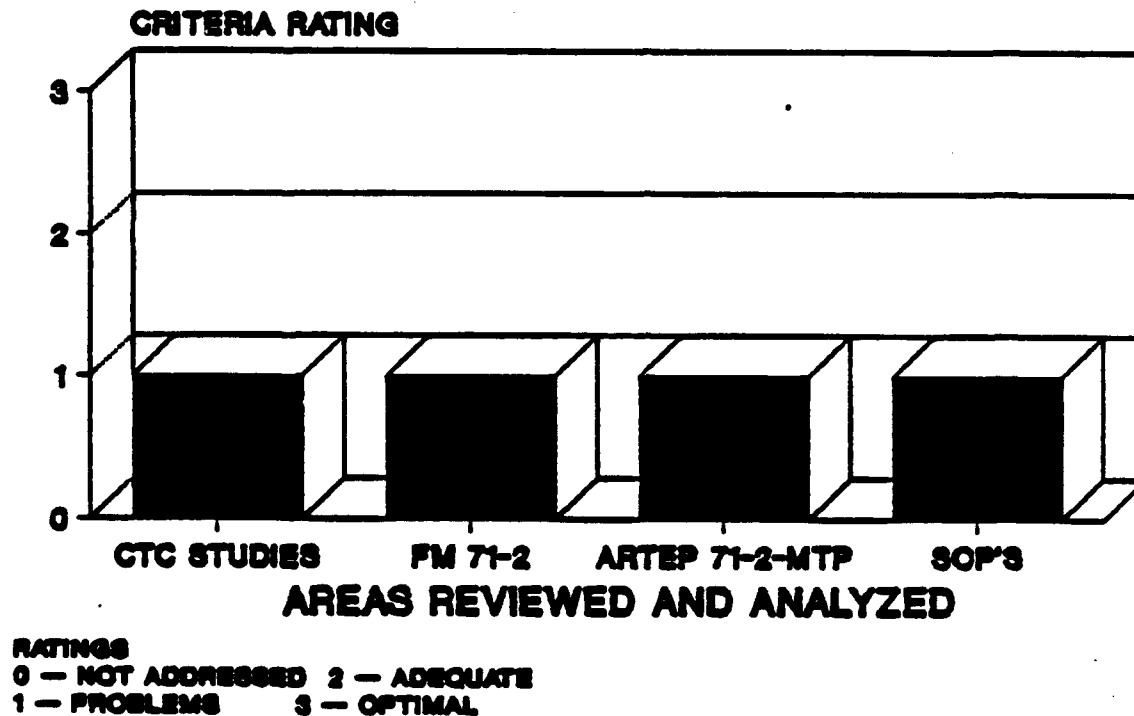


Figure 4-2

## Criteria 2: COMMANDER'S GUIDANCE

**ANALYSIS SUMMARY** (Primary Problem Area: Doctrinal/TTP manuals):

NTC studies show that commanders give limited offensive direct fire guidance. When commanders do provide

guidance, it is often unclear and misunderstood. The manuals discuss commander's guidance, but they do not address it in terms of offensive direct fire considerations. Neither manual provides adequate TTP discussion, especially in the areas involving offensive direct fire operations. SOPs provide some forms of commander's guidance, but it is inadequate for direct fire planning in the offense. The current problem appears to be a lack of TTP and not a unit training problem.

**NTC STUDIES AND O/C OBSERVATIONS** (Criteria Rating - 1 Problems):

There were no specific studies or comments that specifically discussed the commander's direct fire guidance. However, the studies considered commander and staff planning to be generally poor. They also indicate that commanders fail to adequately disseminate intent and requirements to the company and platoon levels. O/C comments indicate a lack of understandable commander's guidance, and a lack of guidance involving offensive direct fire operations.

**FM 71-2** (Criteria Rating - 1 Problems):

There were only a few comments involving commander's guidance and none that addressed commander's guidance for direct fire operations. The manuals do not discuss the critical elements of a commander's guidance. They also fail

to address the procedures or considerations necessary to perform the commander's estimate. The manual is staff-  
14  
oriented and not commander-oriented.

ARTEP 71-2-MTP (Criteria Rating - 1 Problems):

Like FM 71-2, the MTP contains limited discussion on commander's guidance, especially concerning direct fire operations. The discussion that does exist stipulates only that commanders need to issue intent. Specific discussion on content does not exist, especially involving direct fire operations.

In discussions with MTP authors, development of the tasks and conditions did not include criteria to measure commanders performance. The rationale behind this concept was that MTPs were a tool to assist commanders in measuring their unit's training. They were not intended to be an test  
15  
of the unit or his (the commander's) performance. Although the intent of this concept may be valid, the results could significantly affect a unit's training and performance. In essence, MTPs evaluate only the "Staff Actions" of the military decision making process. The "Commander's Actions" go unevaluated except in terms that he "issued guidance," but not how well it was issued.

What is needed is a subtask that indicates what kind of guidance is necessary to conduct the major task and asks

if the guidance that a commander gave was appropriate for the situation. Currently, poor planning problems can only be traced to poor staff actions. The question that cannot be answered: Is the plan poor because of poor staff actions or because of improper commanders actions (eg. guidance)? It would seem that commanders need training as much as staffs and subordinate units. The MTP is a good place to encourage that training and to provide TTP to assist commanders in training themselves.

#### UNIT SOPs (Criteria Rating - 1 Problems):

By design, the SOPs act as a form of commander's guidance. However, none of the discussion in the SOPs specifically addresses the commander's role or input into the offensive direct fire process. [This observation is not unexpected, but the SOPs were reviewed to see if some did include specific discussion involving this criteria]

#### ADDITIONAL COMMENTS:

During the review of direct fire issues, it became apparent that there was a lot of discussion on the need for more TTP. However, the requests for additional TTP never included a request on "how to" for the commander.

Doctrinal manuals require commanders to give guidance, to give intent, and to conduct a commander's estimate. NTC studies indicate that commanders continue to have major

problems in these areas. What this study did not find was TTP to assist the commander in these areas. For example, where do commanders learn to formulate guidance? Where do commanders receive instruction or discover how to develop the commander's estimate?

The purpose for developing criteria for commander's guidance as part of this study, is to provide commanders with principles to use when formulating their guidance and in this case, direct fire guidance.

## INTENT (TYPE FIRES + PURPOSE) (CDR'S GUIDANCE -- CRITERIA 3)

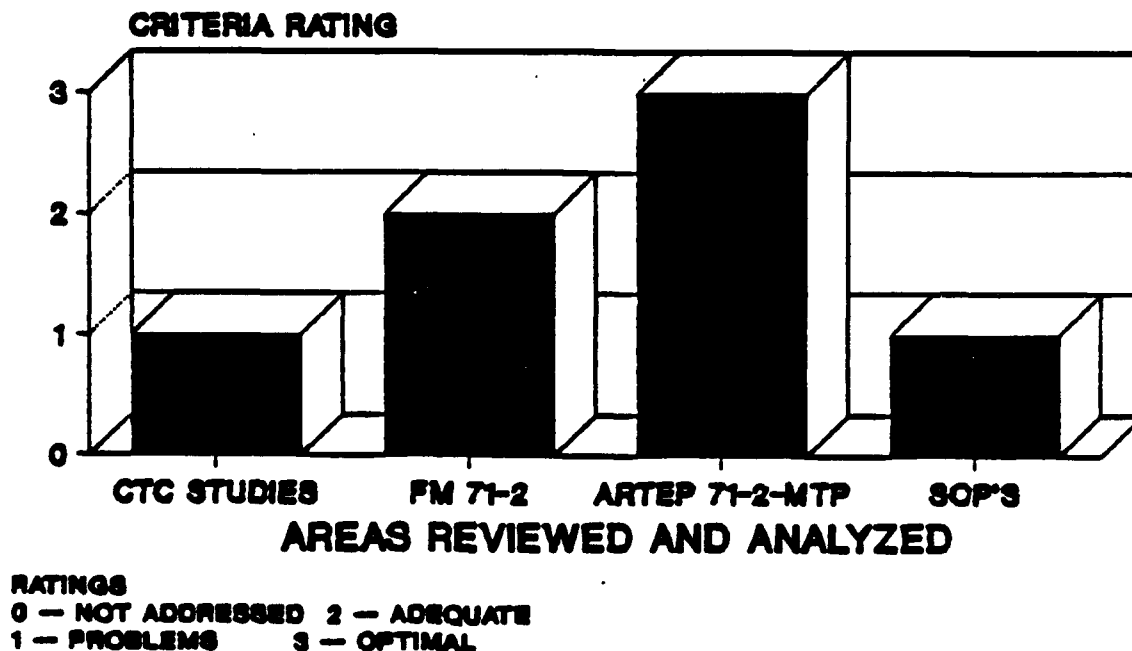


Figure 4-3



### Criteria 3: INTENT (COMMANDER'S GUIDANCE)

#### ANALYSIS SUMMARY (Primary Problem Area: Doctrinal/TTP manuals):

NTC studies and observations clearly indicate a problem in the formulation, use, and dissemination of direct fire intent. Doctrinal manuals have discrepancies, but they clearly highlight the requirement to have an intent statement. However, none of the manuals describe how commanders formulate intent. Unit SOPs do not address this criteria. The major problem appears to be a lack of understanding by commanders on what is intent and how you formulate it. Doctrinal manual shortfalls in this area will continue to make this a problem area.

#### NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

Most offensive operations provided the task force (TF) commander with the opportunity to apply task force level direct fire C2. However, only 12.5% of the time did the commander express an intent or purpose for the employment of their direct fire systems. Company and platoon levels discussed direct fire related intent 37.0% and 42.5% of the time respectively. Although this is an increase over the task force discussion, intent guidance still occurs less

than half the time. The reason for these higher percentages at company and platoon level may be because of the increased doctrinal manual TTP emphasis and discussion involving direct fire operations at these level.

Consistency in intent statements is also a problem. For example, at the platoon level the platoon leader's intent statement was consistent with their company and task force commander's intent statement only 46% of the time. When platoon leaders formulated their plan, it supported the commander's intent only 35.6% of the time. As one study stated: "In most cases, the company commander's intent or the battalion commander's intent was not discussed or briefed in the OPORD. When the commander's intent did reach the platoons it was often very vague." <sup>16</sup>

FM 71-2 (Criteria Rating - 2 Adequate):

There was substantial discussion on the general concept of intent, especially for the general concept of maneuver. No specific discussion of intent for offensive direct fire operations occurs in FM 71-2. FM 71-1, however, had an in-depth discussion on the purpose and desired results for direct fire that coincides with this study's definition of intent. Although the doctrinal discussion does not specifically include it in its concept of intent.

(See Appendix A-3 for this study's definition of direct fire intent).

FM 17-15 and, to a more limited degree, FM 7-7J discuss the same concepts. This increase in discussion at the lower levels may account for the higher percentages identified in the above studies. It also suggests a potential disconnect between the different manual levels. These disconnects can cause misunderstanding and confusion.

None of the manuals discuss how to formulate an intent statement; none of the manuals outline the key elements that an intent statement should include. This is not just a direct fire problem.

ARTEP 71-2-MTP (Criteria Rating - 3 Optimal):

The MTP "attack-by-fire" task specifically addresses the elements of this study's intent criteria.<sup>17</sup> However a problem arises in that this discussion does not occur in any of the other offensive tasks. In addition, this direct fire intent discussion in the MTP does not occur in the discussion in FM 71-2. This discrepancy could cause some confusion and misunderstanding.

UNIT SOPs (Criteria Rating - 0 Not Addressed):

The SOPs lacked discussion involving intent, direct fire or otherwise. Like doctrine, the SOPs suggested the need for an intent statement, but they did not discuss how

or what it should look like. This lack of discussion in SOPs may be an additional indicator that commanders are struggling with the concept of intent. It may also indicate that this is not an area that units can take general guidance and develop TTP. It may be necessary to develop some TTP to assist in this area.

**ADDITIONAL COMMENTS:**

Doctrinal manuals require the use of an intent statement. However, lack of successful performance with intent statements at the NTC indicates the problem still remains. Therefore, doctrinal manuals and perhaps institutional training organizations need to expand their discussion to include a clear definition of intent, a "how to develop" intent process, and a list of what key elements constitute the intent statement.

# **IDENTIFY DIRECT FIRE R&S PRIORITY (PIR/IR) (CDR'S GUIDANCE -- CRITERIA 4)**

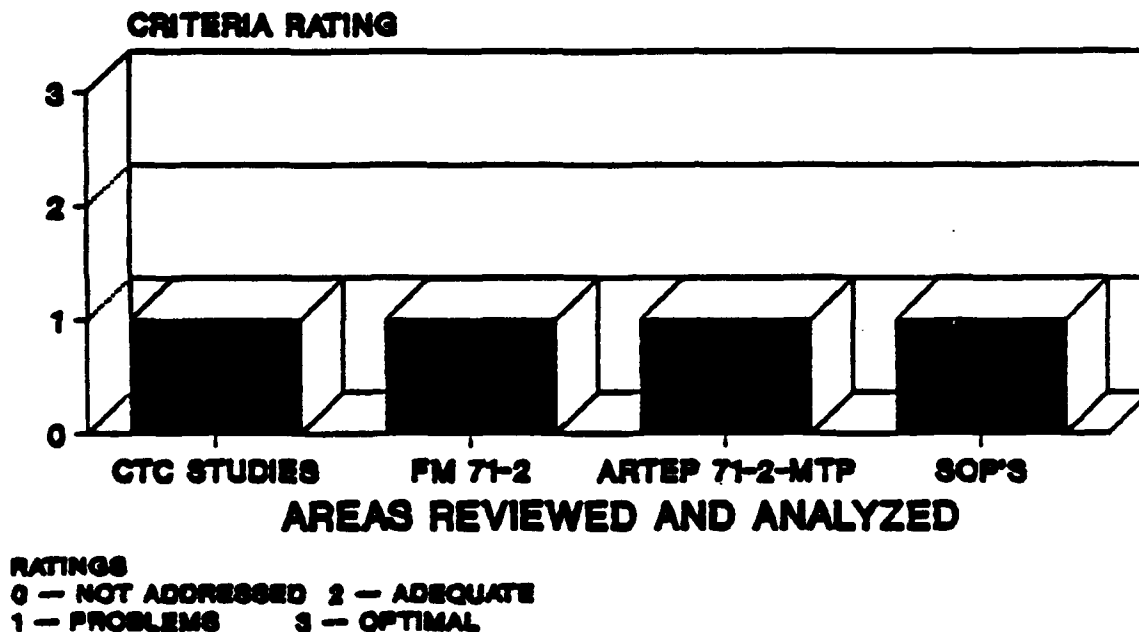


Figure 4-4

**Criteria 4: IDENTIFY DIRECT FIRE R&S PRIORITY (PIR/IR)  
(COMMANDER'S GUIDANCE)**

**ANALYSIS SUMMARY** (Primary Problem Areas: Doctrinal/TTP manuals and unit training):

Reconnaissance and surveillance (R&S) and priority intelligence requirements (PIR) designation are larger

problems than just the direct fire aspect. NTC OPFOR success demonstrates the usefulness of accurate reconnaissance against a priority target. The analyzed documents fail to adequately address the commander's role and the integrations necessary to focus reconnaissance efforts in support of direct fire operations. This problem appears to involve both doctrine, TTP, and unit training shortfalls.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating -  
1 Problems):

NTC has conducted studies specifically focused on reconnaissance and counter-reconnaissance. Martin Goldsmith's study on tactical reconnaissance suggests a significant doctrine and unit training problem.<sup>18</sup> NTC O/C observations describe a clear link between effective reconnaissance and the identification and destruction of targets by either direct or indirect fires.

OPFOR techniques specifically prioritize enemy tank positions and require their reconnaissance elements to identify 90% of these positions. They subsequently target<sup>19</sup> these positions with indirect and direct fires. The general conclusion from these studies and observations suggests that there are doctrine and unit performance problems involving this criteria.

**FM 71-2 (Criteria Rating - 1 Problems):**

The manual discusses the responsibilities of the task force commander to identify PIRs. However, it fails to discuss how this process contributes to direct fire operations. The manual also has numerous discussion discrepancies involving reconnaissance with subordinate and MTP manuals. These discrepancies can contribute to a disjointed reconnaissance and planning effort, thereby affecting offensive direct fire operations.

20

The major problem with the manual appears to be its lack of TTP involving the integration of direct fire planning considerations with the reconnaissance planning effort. The problem does not appear to involve the commander's role in providing guidance to the intelligence process.

**ARTEP 71-2-MTP (Criteria Rating - 1 Problems):**

The "attack-by-fire" task alludes to a linkage between direct fire operations and reconnaissance; however, discussion is limited and similar discussion does not appear in the other tasks. The discrepancies discussed above between FM 71-2 and the MTP also can cause a problem in the way units train.

**UNIT SOPs (Criteria Rating - 1 Problems)**

Earlier SOPs do not address this criteria. Newer SOPs establish a large PIR list (fourteen requirements),

but, this list has several problems. First, the number of PIRs may exceed a normal task force's collection assets. Second, there is no discussion involving reconnaissance and direct fire operation.

It appears that this increase in reconnaissance discussion in the newer SOPs comes from their experiences at the NTC and the lack of adequate discussion in the doctrinal manuals. Unfortunately, they have not improved their discussion involving reconnaissance role in conducting direct fire operations.

#### ADDITIONAL COMMENTS:

The reconnaissance effort is essential for conducting offensive direct fire operations. Although direct fire planning can be conducted using maps, the reconnaissance effort confirms or denies the operational plan. Therefore, current reconnaissance failures, both in unit performance and manual TTP discussions, significantly affect the conduct of offensive direct fire operations. Manuals need to develop TTP that can assist the commander in identifying PIRs that aid in the conduct of offensive direct fire operations.



# IDENTIFIES ENGAGEMENT PRIORITIES (CDR'S GUIDANCE -- CRITERIA 5)

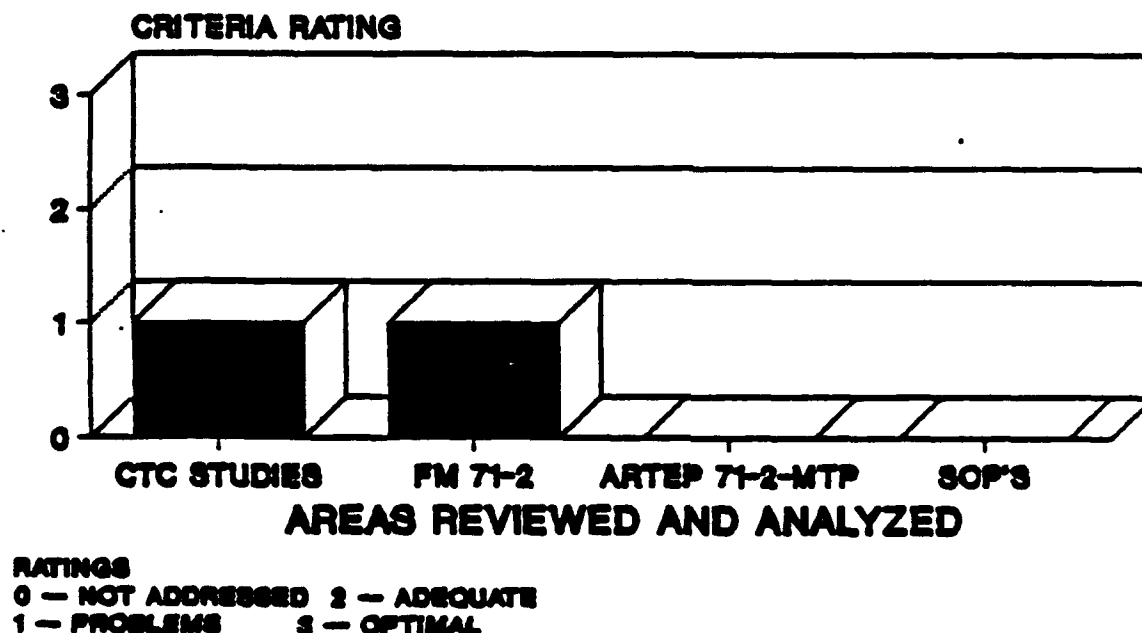


Figure 4-5

**Criteria 5: IDENTIFIES ENGAGEMENT PRIORITIES (COMMANDER'S GUIDANCE)**

**ANALYSIS SUMMARY** (Primary Problem Areas: Doctrinal/TTP manuals and unit training):

There are significant problems involved with the issuance and adherence to engagement priorities. Linkage

problems between the task force and lower level manuals and the poor crew level performance suggests this may be both a doctrine and unit training problem.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

NTC studies indicate that task forces and that companies and teams establish engagement priorities only 12.2% of the time. When commanders designate engagement priorities, the individual gunners followed the designated engagement criteria only 3.4% of the time. O/C observations explain this poor performance as improper target identification, poor acquisition and the inability of leaders to<sup>22</sup> command and control fires. In essence, individual weapons and vehicles fight individual battles. If a target appears in a gunners viewing area, he engages it despite the engagement<sup>23</sup> priority.

FM 71-2 (Criteria Rating - 1 Problems):

FM 71-2 only alluded to this criteria. However, there is extensive discussion of engagement priorities in<sup>24</sup> the lower level manuals. A problem rises because FM 71-1 expects task forces to issue some form of engagement priori-<sup>25</sup> ty, while task force manuals fail to discuss the concept.

ARTEP 71-2-MTP and UNIT SOPs(Criteria Ratings - 0 Not Addressed):

None of these publications comment on this criteria.

ADDITIONAL COMMENTS:

The lack of discussion involving this criteria compared to the identified problems casts doubt on the value of this criteria at the task force level, so this thesis reviewed the criteria validity. Review findings include the following:

First, NTC data shows that the average tank in live fire expends four to five rounds per kill. If tanks waste four to five rounds engaging non-prioritized enemy vehicles, then ammunition supply becomes a problem.

Second, many observations include incidents where a tank engaged a BMP while a nearby T72 engaged the tank and killed it.

Third, BFV's showed a propensity to expend numerous 25mm rounds against tanks while a BMP was within its area of engagement.

Finally, if commanders establish engagement priorities, gunners and crews will have to conduct more thorough target identification thereby limiting fratricide incidents.

Based on these observations the criteria appears to be valid and needs additional doctrinal TTP discussion and unit training emphasis.

## IDENTIFIES WEAPON'S POSITION/INTEGRATION (CDR'S GUIDANCE -- CRITERIA 6)

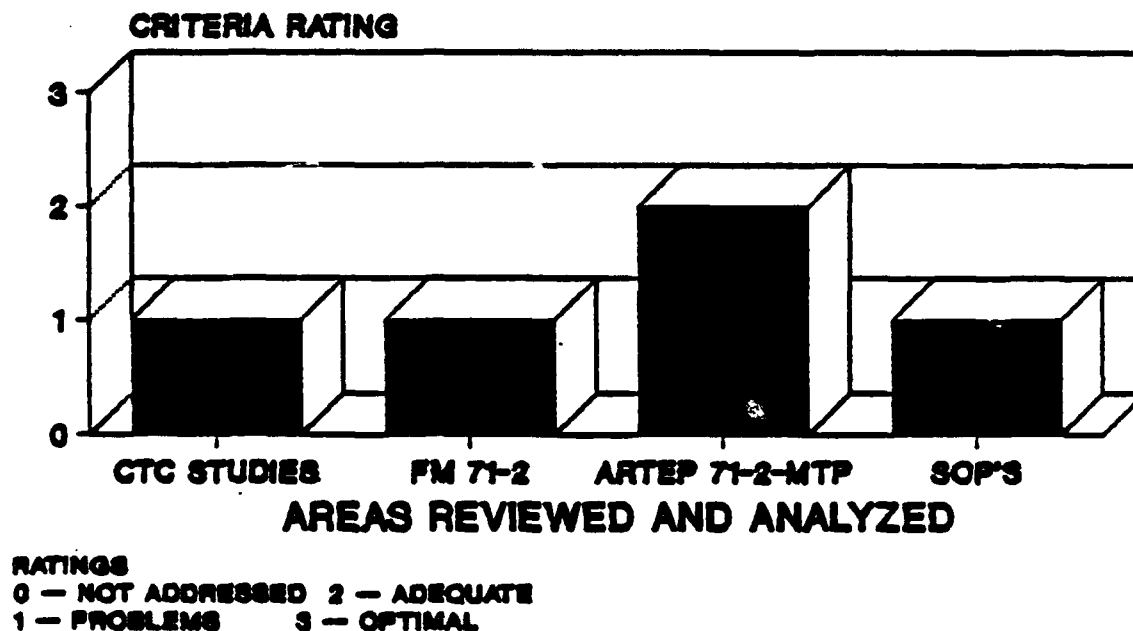


Figure 4-6

**Criteria 6: IDENTIFIES WEAPON'S POSITION OR INTEGRATION  
(COMMANDER'S GUIDANCE)**

**ANALYSIS SUMMARY** (Primary Problem Areas: Doctrinal/TTP manuals and unit training):

NTC studies and observations indicate a planning and execution problem in properly positioning and integrating their direct fire systems. The publications identify the need to designate weapons positions, but fail to discuss how the weapons should be integrated in support of the scheme of maneuver. The problem appears to be a combination of doctrine and unit training shortfalls.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

A 1985 direct fire study spotlighted that task force commanders failed to get 50% of their systems into the battle. O/C observations also say that during the movement phase, most task forces tend to standardize their formations despite the terrain or threat. For example, the "Box," "Diamond," and "Column" is the standard formations. Yet, when the enemy threat is on the left or right of the direction of movement, an "Echelon Left or Right" may be more appropriate.

During actions on the objective, task forces planned to establish overwatch and support by fire positions outside OPFOR maximum range only 50% of the time. The terms overwatch, support-by-fire, attack-by-fire and base of fire are the most often used terms in offensive planning. O/C observations indicated that there is often confusion by subordinate commanders about what these terms mean and what is sup

posed to occur at the designated position. O/C observations also indicate that commanders and staff fail to visualize the integration of their weapon systems into a direct fire plan. Emphasis is on reaction and battle drills, even at the  
27  
objective.

FM 71-2 (Criteria Rating - 1 Problems):

The manual discusses the advantages of the different movement formations in terms of direct fire considerations, but the planning process discussion does not address or emphasize the link between movement formations, reconnaissance, and direct fire operations. The manual discusses positioning aspects in terms of obtaining a position of advantage over the enemy (maneuver). It does not provide TTP for the employment and integration of weapons systems once the systems are in position. These problems permeate lower level manuals as well.

ARTEP 71-2-MTP (Criteria Rating - 2 Adequate):

There is substantial discussion in the MTP to highlight the importance of identifying weapons positions as well as some discussion on the integration of these systems into the battle. The problem is it only addresses this aspect for the "attack-by-fire" task. No similar discussion occurs in the other offensive tasks.

UNIT SOPs (Criteria Rating - 1 Problems):

Like the field manuals, the SOPs address positioning but not employment and integration.

ADDITIONAL COMMENTS:

As discussed in the analysis of criteria one (direct fire planning), there is adequate discussion of the movement and positioning aspect of direct fire systems. Failures appear to be the result of two factors:

First, there is a lack of TTP involving the employment of the systems once they are in position.

Second, NTC studies show that units, even with adequate TTP discussion, fail to adequately perform the movement and positioning aspect as well as the direct fire aspect.

# IDENTIFIES TECHNIQUES OF FIRE (CDR'S GUIDANCE -- CRITERIA 7)

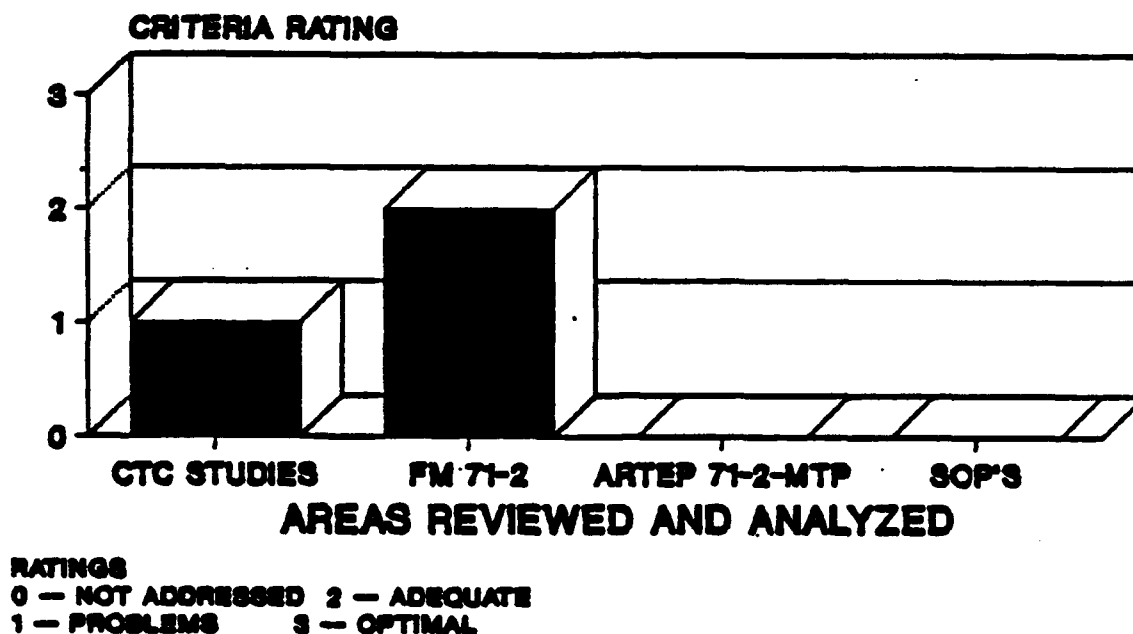


Figure 4-7

**Criteria 7: IDENTIFIES TECHNIQUES OF FIRE (COMMANDER'S GUIDANCE)**

**ANALYSIS SUMMARY** (Primary Problem Areas: Doctrinal/TTP manuals and unit training):

NTC observations indicate failures by commanders to identify techniques of fire for their subordinates. Neither task force level manuals nor SOPs discuss this criteria. However, lower level manuals contain extensive discussion



involving this criteria. The major problems appear to be a lack of TTP discussion in task force manuals and unit training at the lower levels (company and below).

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

No specific study addressed this criteria. However, O/C comments illustrate a failure by lower level commanders (Co/Plt) to identify a specific technique of fire in their planning process. This is particularly true for offensive operations. When commanders assigned a technique of fire, the individual crews often failed to execute as directed. There was no mention of task force level involvement or  
28  
problems in this area.

FM 71-2 (Criteria Rating - 2 Adequate):

Only one insignificant comment exists in FM 71-2.  
29  
There is significant discussion of this criteria in lower  
30  
level manuals. There appears to be a coordination problem between task force and lower level discussions.

ARTEP 71-2-MTP and UNIT SOPs (Criteria Rating - 0 Not Addressed):

None of these publications comment on this criteria.

#### ADDITIONAL COMMENTS:

This is a valid technique if task force commanders plan on conducting task force level direct fire operations. However, the task force level publications do not discuss this concept. The lower level manuals appear to have adequate TTP, but NTC studies still indicate a unit performance problem. Therefore, problems appear to be doctrinal at the task force level and unit training at the lower levels.

## IDENTIFIES FIRE PATTERNS (CDR'S GUIDANCE -- CRITERIA 8)

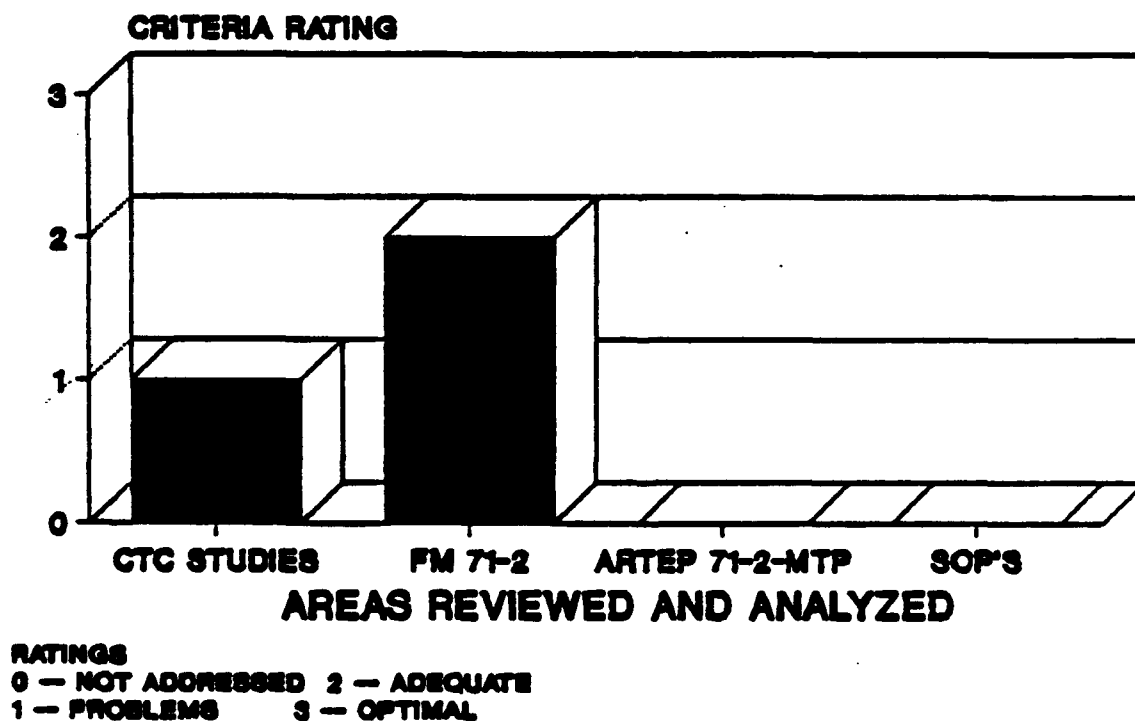


Figure 4-8

**Criteria 8: IDENTIFIES FIRE PATTERNS (COMMANDER'S GUIDANCE)**

**ANALYSIS SUMMARY** (Primary Problem Areas: Doctrinal/TTP manuals and unit training):

NTC observations show failures by commanders to identify fire patterns for their subordinates. Neither task force level doctrine nor SOPs discuss this criteria. However, lower level manuals do contain extensive discussion on this criteria. The problems appear to be a lack of discussion in task force manuals and a lack of emphasis in unit training at the lower levels (the same problems as the previous criteria involving techniques of fire).

**NTC STUDIES AND O/C OBSERVATIONS** (Criteria Rating - 1 Problems):

No specific study addressed this criteria. However, O/C comments show failures by lower level commanders to identify specific fire patterns in their planning process. This is particularly true for offensive operations. When commanders assigned a technique of fire, the individual crews often failed to execute as directed. There was no mention of task force level involvement or problems in this  
31  
area.

FM 71-2 (Criteria Rating - 2 Adequate):

32

Only one insignificant comment exists in FM 71-2.

There is significant discussion of this criteria in lower

33

level manuals. There appears to be a coordination problem between task force and lower level discussions.

ARTEP 71-2-MTP and UNIT SOPs (Criteria Rating - 0 Not Addressed):

None of these publications comment on this criteria.

ADDITIONAL COMMENTS:

The lower level manuals appear to have adequate TTP, but NTC studies still indicate a unit performance problem. Therefore, problems appear to be doctrinal at the task force level and unit training at the lower levels.

# DESIGNATES DIRECT FIRE REHEARSAL -- TYPE/TIME (CDR'S GUIDANCE -- CRITERIA 9)

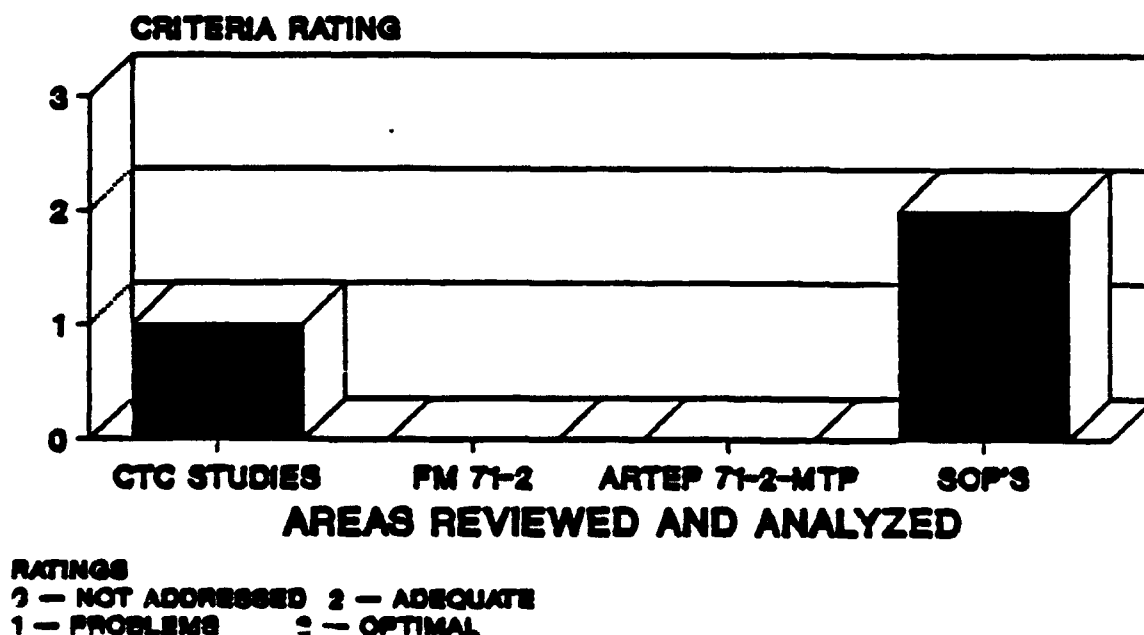


Figure 4-9

**Criteria 9: DESIGNATES DIRECT FIRE REHEARSAL (COMMANDERS GUIDANCE)**

**ANALYSIS SUMMARY** (Primary Problem Area: Doctrinal/TTP manuals):

In general, O/C observations show that commanders fail to designate rehearsal types and content. The manuals fail to address the commander's responsibilities in direct-

ing and conducting rehearsals. They also fail to discuss the concept of an offensive direct fire rehearsal. One SOP comment does specifically addressed rehearsals in a partial context of this criteria. The major problem appears to be a lack of TTP discussion involving types, content and in ways of conducting rehearsals, as well as the commanders role in this process.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

O/C comments highlight that commanders often direct subordinate units to conduct rehearsals, but in most cases they fail to designate the type of rehearsal, the participants, and the desired standard or content for the rehearsal. The rehearsals that are conducted orient on movement and indirect fires. Most rehearsals conducted for offensive operations do not include direct fire operations. If a unit conducts offensive rehearsals, the rehearsal normally takes the form of platoon-level battle drills.

FM 71-2 and ARTEP 71-2-MTP(Criteria Rating - 0 Not Addressed):

These manuals do not address or allude-to this criteria

**UNIT SOPs (Criteria Rating - 2 Adequate):**

One newer SOP contained a specific comment that  
required the commander to designate the rehearsal type,  
but did not specifically refer to direct fire operations in  
the offense.

**ADDITIONAL COMMENTS:**

Lack of discussion involving the direct fire contribution to the scheme of maneuver during offensive operations may hinder performance of this criteria. If there is no plan for the employment of the direct fire systems, it is tough to rehearse one. This may account for the emphasis on battle drill rehearsals by most units. However, this study provides some TTP on conducting rehearsals in Appendix B-3.

# DESIGNATES WEAPONS MAINTENANCE PRIORITY (CDR'S GUIDANCE -- CRITERIA 10)

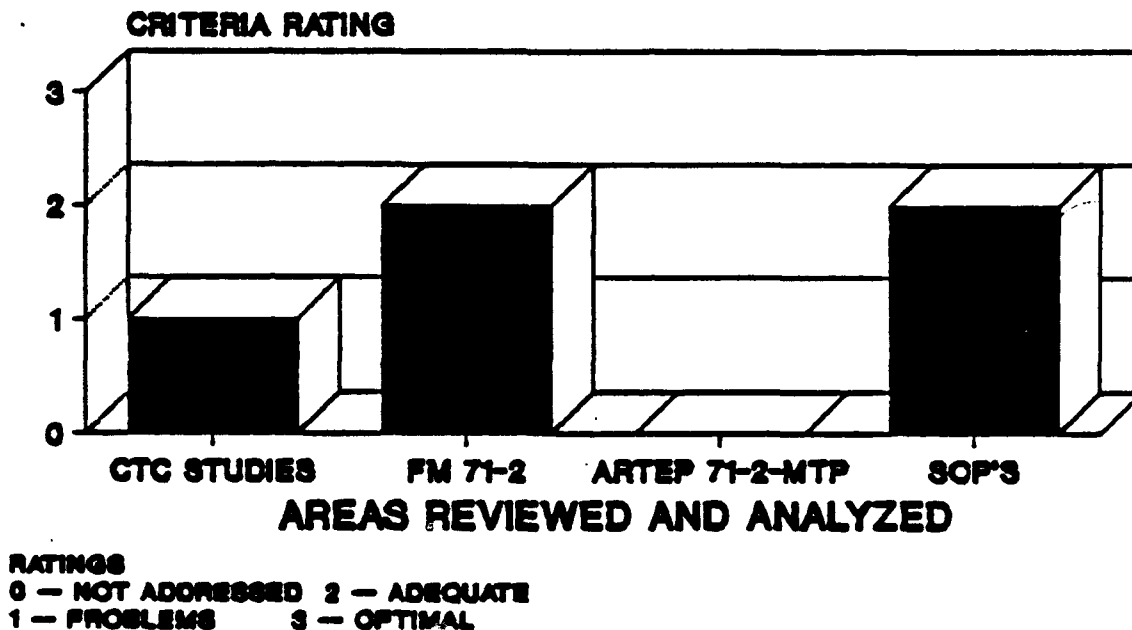


Figure 4-10

**Criteria 10: DESIGNATES WEAPONS MAINTENANCE PRIORITY (COMMANDER'S GUIDANCE)**

**ANALYSIS SUMMARY** (Primary Problem Areas: Training manual and unit training):

The problem with this criteria involves the execution rather than the designation of maintenance priorities by the



commander. Although this failure could be blamed on unit training, the lack of an evaluation task in the MTP may be a factor. Both the maneuver manuals and the SOPs adequately discuss the commander's need to designate maintenance priorities. Establishment of a problem of having fixed priority instead of one that is mission dependent also causes problem.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

O/C observations indicate that while commanders understand the need to designate a weapon's maintenance priority, but they do not always tailor their maintenance priority to the mission. For example, a commander will issue a blanket maintenance priority for the whole rotation and fail to adjust it based on mission and changing maintenance statuses (eg. high deadline status in ammunition trucks may require a maintenance priority change). A more serious problem is the failure by mechanics to follow the designated priority.

36

FM 71-2 and UNIT SOPs (Criteria Rating - 2 Adequate):

Both documents discuss the need to establish a maintenance priority. The SOPs tend to establish a fixed priority and not one that can be adjusted to the situation.

ARTEP 71-2-MTP (Criteria Rating - 0 Not Addressed):

The lack of discussion in the MTP may be one reason <sup>37</sup> for the failure in the execution of designated priorities. If MTP's do not evaluate unit commanders and their staffs on this criteria, then the maintenance teams cannot be evaluated on how well they adhere to the maintenance priority. This evaluation also should measure if the maintenance priority designed by the commander agrees with the situational maintenance needs.

## DESIGNATES CRITICAL CONTROL MEASURES (CDR'S GUIDANCE -- CRITERIA 11)

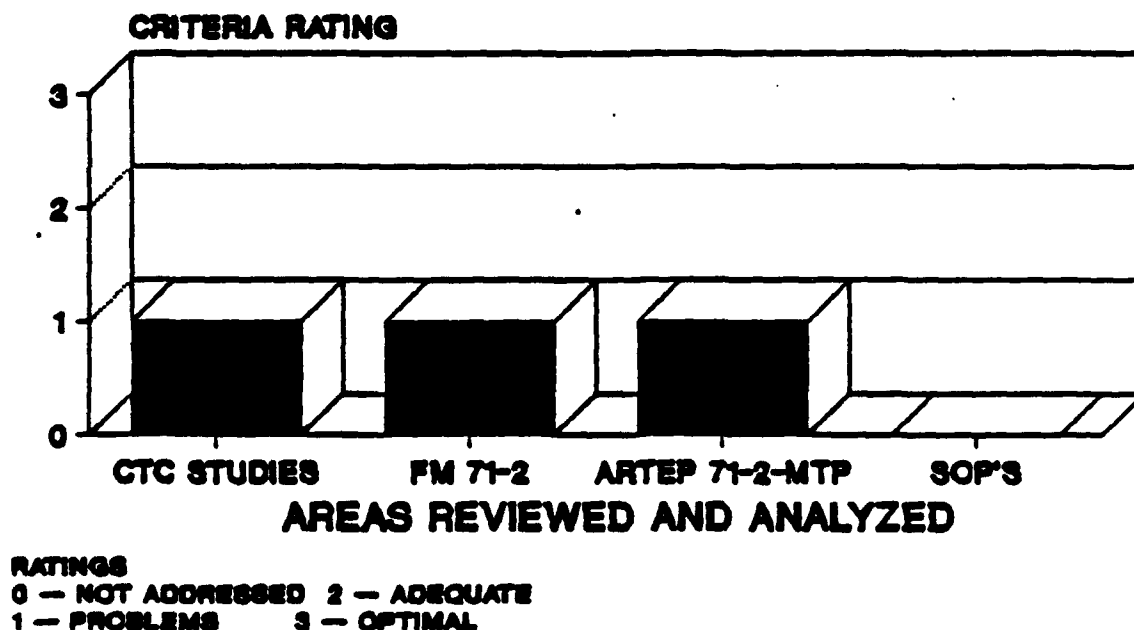


Figure 4-11

**Criteria 11: DESIGNATES CRITICAL CONTROL MEASURES (COMMANDER'S GUIDANCE)**

**ANALYSIS SUMMARY** (Primary Problem Areas: Doctrinal/TTP manuals):

Doctrine and units understand the concept, but they do not apply it to direct fire operations in the offense. The problem appears to result from the previously discussed problem involving a lack of emphasis and TTP by the publications concerning direct fire systems role in the scheme of maneuver.

**NTC STUDIES AND O/C OBSERVATIONS** (Criteria Rating - 1 Problems):

O/C observations indicate that units understand the concept of designating critical control measures. However, most units normally apply it only to movement and indirect fire control measures for offensive operations. Commanders apply this concept, including the designation of direct fire control measures, during defensive operations; lack of TTP involving direct fire planning appears to be the reason commanders fail to apply this same concept during offensive operations.

**FM 71-2 (Criteria Rating - 1 Problems):**

This manual addresses the need for this criteria, although most of the emphasis is on movement and not on direct fire control measures.<sup>39</sup> There is also a lack of discussion involving supervision to ensure the control measures are properly disseminated.

**ARTEP 71-2-MTP (Criteria Rating - 1 Problems):**

The MTP addresses the criteria in only an indirect method. It does not list a task to evaluate the designation or dissemination of this criteria. Consequently, there may be a problem in what maneuver doctrine deems important and what training doctrine evaluates.

**UNIT SOPs (Criteria Rating - 0 Not Addressed):**<sup>4</sup>

There is adequate discussion of control measures, but not in the context of this criteria. Again, discussion focuses on movement and indirect fires, and not on direct fires.

**ADDITIONAL COMMENTS:**

Doctrine and commanders clearly recognize the need to designate critical control measures. Their failure to designate direct fire control measures during offensive operations is most likely the result of doctrines failure to

discuss TTP for the employment of direct fire systems as part of the scheme of maneuver (See additional comments discussion criteria one).

This MMAS thesis recommends that commanders use the same procedures currently used to designate critical indirect fire control measures for the designation of critical direct fire control measures. For example, a commander may want to neutralize a motorized rifle platoon battle position to prevent it from reinforcing the adjacent platoon position where he is planning his penetration attack. The commander then normally assigns a indirect target group as a critical control measure to accomplish this task. However, he could also establish a direct fire engagement area to perform the same mission. This has several benefits:

First, the commander gets complementing fires.

Second, if the indirect fires fail or are not in synchronization with maneuver forces, the commander still achieves his neutralization effects.

Finally, the subordinate commander who receives this mission can now plan his fires in the same detail that he plans his defensive fires, because he has a specified engagement area.

# CONTROL MEASURES (CRITERIA 12)

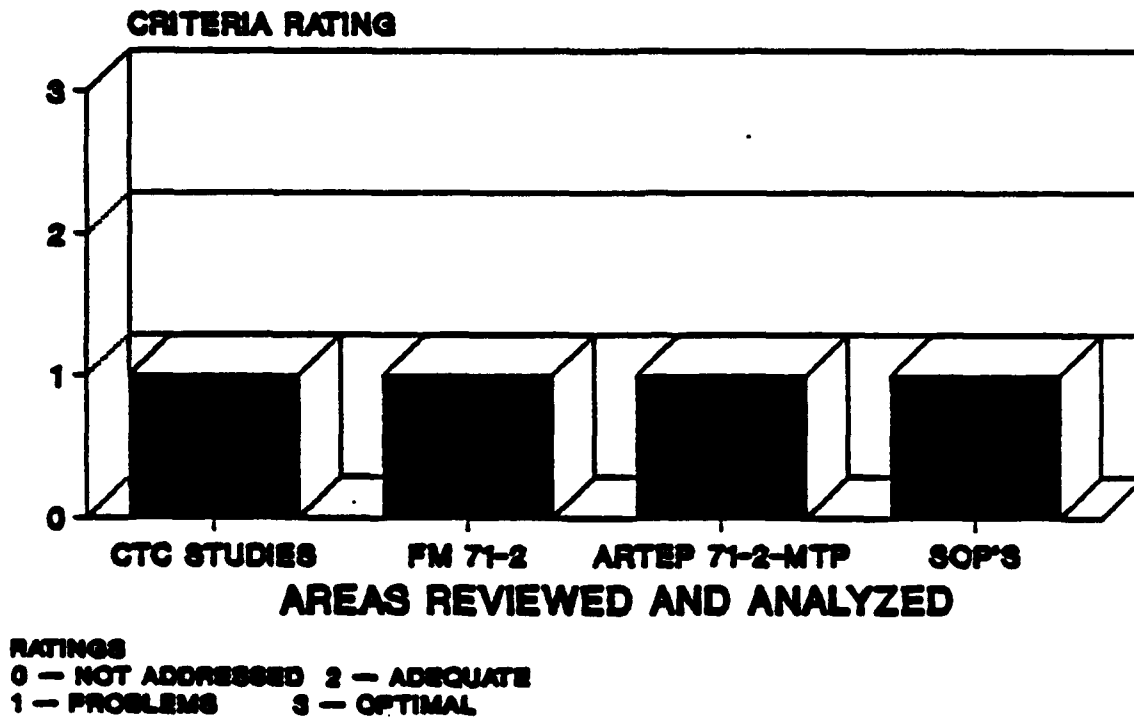


Figure 4-12

## Criteria 12: CONTROL MEASURES

**ANALYSIS SUMMARY:**(Primary Problem Areas: Doctrinal/TTP manuals):

Limited and improper use of direct fire control measures at the NTC reflects the problems and lack of empha-

sis in our current doctrinal manuals. Although unit SOPs attempt to expand doctrinal discussion, terminology problems and the failure by subordinates to know and use unit SOPs limit their effectiveness.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

NTC studies and O/C observations indicate a substantial problem area involving the general use--or lack of use--of control measures. These problems apply to all control measures and not just those involved with direct fire operations.

The first problem involves terminology. Commanders often use terms that are not defined in doctrine or are not understood by their subordinates. For example, in one situation a task force commander directed a company commander to establish an FPF along a dismounted avenue of approach. The subordinate interpreted the commander's direction to apply to an indirect FPF and not a doctrinal FPF that includes both direct and indirect fires. Consequently, dismounted OPFOR attacked along the avenue, the artillery failed to fire their FPF, and the company commander was unable to mass his small arms fire because of a lack of control measures. The OPFOR overran the position.

Another problem is that only 34.3% of the time do the direct fire control measures support other staff plans.

The execution of control measures was rated only moderately effective or better only twenty-one point nine percent (21.9%) of the time. Additional studies and observations suggest that similar problems exist at company and platoon levels.<sup>41</sup>

FM 71-2 (Criteria Rating - 1 Problems):

Numerous comments and some definitions concern control measures in FM 71-2. However, most of the FM 71-2's control measure discussion focuses on movement, indirect fires, and air defense control measures with only minimal discussion of direct fire control measures. Company and platoon manuals expand the discussion, but fail to adequately define terms that differ from those used in the task force-level manuals. The majority of discussion in all the manuals is on graphic control measures and not on other types (eg. voice, audio, rules of engagement).<sup>42</sup>

The major problem is the lack of control measure discussion during offensive direct fire operations. Emphasis is on TIRs and battle drills to control direct fire actions not planned and designated direct fire control measures.<sup>43</sup>

ARTEP 71-2-MTP (Criteria Rating - 1 Problems):

The MTP suffers from many of the same problems that



exist in the maneuver manuals. The "attack-by-fire" task does go into some good TTP discussion involving direct fire control measures. Unfortunately the same discussion does not appear in the other offensive tasks.

UNIT SOPs (Criteria Rating - 1 Problems):

The SOPs also suffer from terminology problems and emphasis on other than direct fire control measures. The SOPs discuss other types of control measures rather than just graphic ones. The failure of most units to know and apply their SOPs hinders the success these other control measures should produce. This is a good idea poorly prepared and executed.

ADDITIONAL COMMENTS:

Most of these problems do not apply just to offensive operations. However, these control measure could play a major role in developing TTP that incorporates direct fire systems into the offense scheme of maneuver. Lack of TTP for offensive direct fire planning further limits the effectiveness and employment of direct fire systems. The major problem appears to be a shortage of TTP in doctrine and not unit training.

# ESTABLISHED FOR ACTIONS ON THE OBJECTIVE (CONTROL MEASURES -- CRITERIA 13)

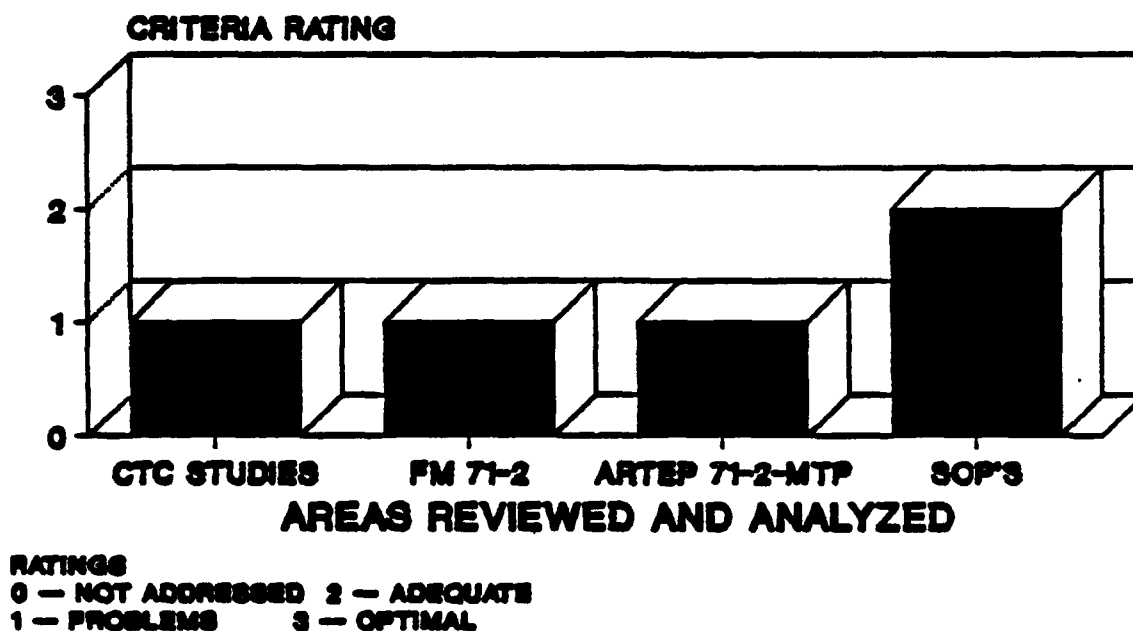


Figure 4-13

**Criteria 13:** ESTABLISHED FOR ACTIONS ON THE OBJECTIVE  
(CONTROL MEASURES)

**ANALYSIS SUMMARY** (Primary Problem Area: Doctrinal/TTP manuals):

The lack of planning for actions on the objective is the primary reason for failure to establish control measures for actions on the objective. The task force level manuals discuss the need for control measures on the objective, but

there is little TTP available. However, current unit SOPs offer an expanded discussion on this criteria. The most serious problem involves the failure by the MTP to establish tasks or conditions that require the attack against a deliberate defense, a strongpoint, or in urban terrain.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

O/C observations and studies indicate that commanders emphasize movement and indirect fire operations and not direct fire operations. The major problem is the lack of direct fire planning in general. When commanders establish control measures, the measures are not adequately disseminated or understood. Consequently, command and control using these control measures is almost impossible.

44

FM 71-2 (Criteria Rating - 1 Problems):

FM 71-2 addresses this criteria but not in sufficient detail for offensive operations. Lower manuals emphasize the use of TIRs and battle drills for direct fire operations. TTP that could help in the development of control measures for actions on the objective is absent at all levels.

ARTEP 71-2-MTP (Criteria Rating - 1 Problems):

The attack-by-fire task does address this concept, but all other tasks address it only minimally. A major problem between FM 71-2 and the MTP is the lack of a MTP task or subtask that requires an attack against a prepared defense, a strongpoint or in urban terrain. The hardest condition currently available in the MTP is an attack against a hasty defense.<sup>45</sup> Therefore, most units do not conduct training using the planning considerations necessary to defeat difficult defensive positions. This training emphasis usually reinforces the unit's perception that it is unnecessary to plan for direct fires. Hasty defenses occur in situations where there is not much planning time. Therefore, units tend to depend on battle drills and not on planning.

UNIT SOPs (Criteria Rating - 2 Adequate):

More recent SOPs have added substantial discussion involving actions on the objective. These SOPs appear to be in response to prior NTC training and noted doctrinal shortfalls. Unfortunately, this expansive discussion is only in a few of the SOPs.

ADDITIONAL COMMENTS:

Planning for actions on the objective requires the same degree of thought and consideration that conducting a

defense of a battle position would require. It still requires the identification of fighting positions (support-by-fire position), it still requires the ability to mass fires at the critical point (point of penetration), and it still requires an adequate number of control measures to control fires and react to changing situations. The only difference involves the increased importance of the intelligence process, because each commander cannot conduct a personal reconnaissance. The more difficult the mission (attack of a strongpoint, for example), the more it becomes necessary to conduct a detailed plan.

Doctrinal manuals fail to discuss or emphasize this concept. Instead they limit direct fire planning considerations to the movement and positioning portion of maneuver. Until TTP is developed to incorporate direct fire systems into the scheme of maneuver, units will continue not to plan for actions on the objective, and they will continue to die at the obstacles.

# ESTABLISHED FOR THE MOVEMENT PHASE (CONTROL MEASURES -- CRITERIA 14)

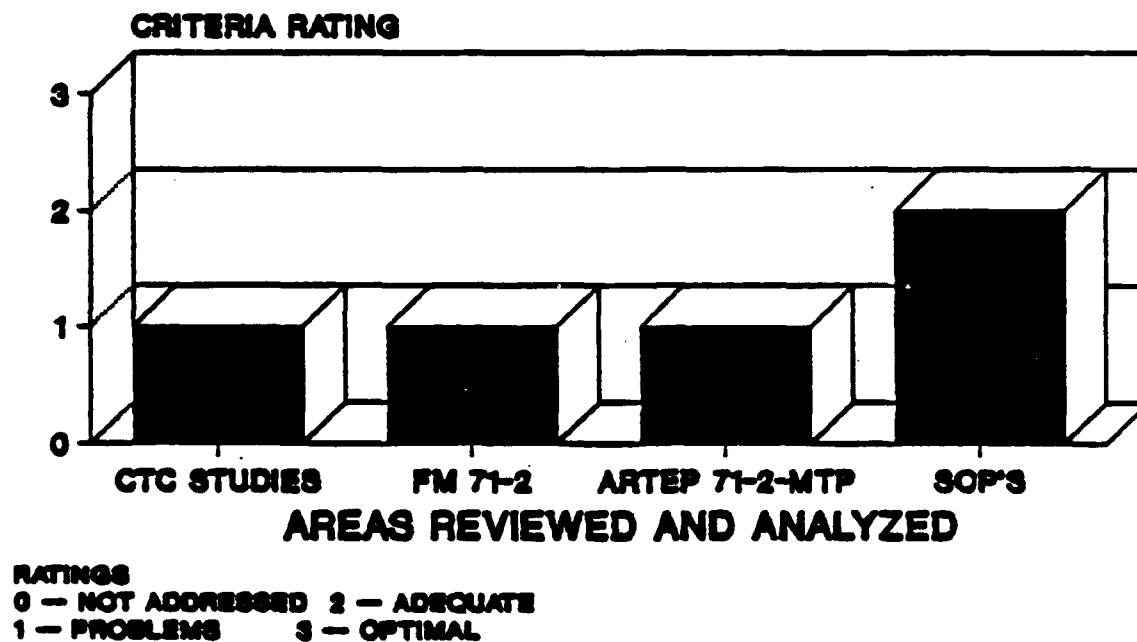


Figure 4-14

**Criteria 14:** ESTABLISHED FOR THE MOVEMENT PHASE (CONTROL MEASURES)

**ANALYSIS SUMMARY** (Primary Problem Area: Doctrinal/TTP manuals):

O/C observations show that commanders fail to plan and establish direct fire control measures during the move-

ment phase. Direct fire operations, especially during the movement phase depend on battle and action drills. These actions parallel the limited discussion in all the publications. The current problem appears to stem from a lack of TTP and not unit training.

46

**NTC STUDIES AND O/C OBSERVATIONS** (Criteria Rating - 1 Problems):

O/C observations indicate a clear lack of emphasis on direct fire planning and, consequently, there is an equal lack of emphasis on control measures during the movement phase. This is best exemplified by a summary of a typical movement planning process. The task force commander and S3 will spend most of their planning time identifying an axis of advance, phase lines, limits of advance, checkpoints, passage of lines points, and other movement control graphics. Then the task force commander, the S3, and the FSO will spend another large portion of time planning and synchronizing indirect fires with the movement plan. Considerations include the establishment of TRPs along the route of march and on likely enemy positions, the identification of decision points to lift and shift fires, and the displacement positions for repositioning batteries. The commander will then brief his order and state companies and platoons will use battle drills to react to enemy contact. The

problem with this is it constitutes the only fire planning conducted for most operations.

FM 71-2 and 71-2-MTP (Criteria Rating - 1 Problems):

The lack of emphasis highlighted by the O/C observations is apparent in the lack of discussion in these manuals. These manuals together only have three comments referring to this criteria.<sup>47</sup> Neither manual specifically addresses the establishment of direct fire control measures during offensive operations.

UNIT SOPs (Criteria Rating - 2 Adequate):

Unit SOPs, especially the play and battle books, discuss control measures more during the movement phase. Although there are no major discrepancies, most of the control measures are movement and not direct fire oriented. Most of the direct fire comments limit their discussion to "identifying an overwatch position," "identifying a support by fire position," etc. The SOPs tend to emphasize battle and reaction drills rather than preplanned direct fire control measures.

ADDITIONAL COMMENTS:

Although TTP exists, emphasis is not on the integration of direct fire systems into the scheme of maneuver.



TTP discussion should include:

- \* The role of the intelligence process in identifying movement avenues (avenues of approach), likely enemy positions, choke points etc.

- \* Establishing control measure to facilitate direct and indirect fires on identified enemy or likely enemy positions.

- \* Establishing control measures to facilitate direct fires for contingencies and unexpected combat actions. Planning and establishing control measures throughout the area of movement will increase flexibility, not lessen it.

# ESTABLISHED IN ADEQUATE QUANTITY (CONTROL MEASURES -- CRITERIA 15)

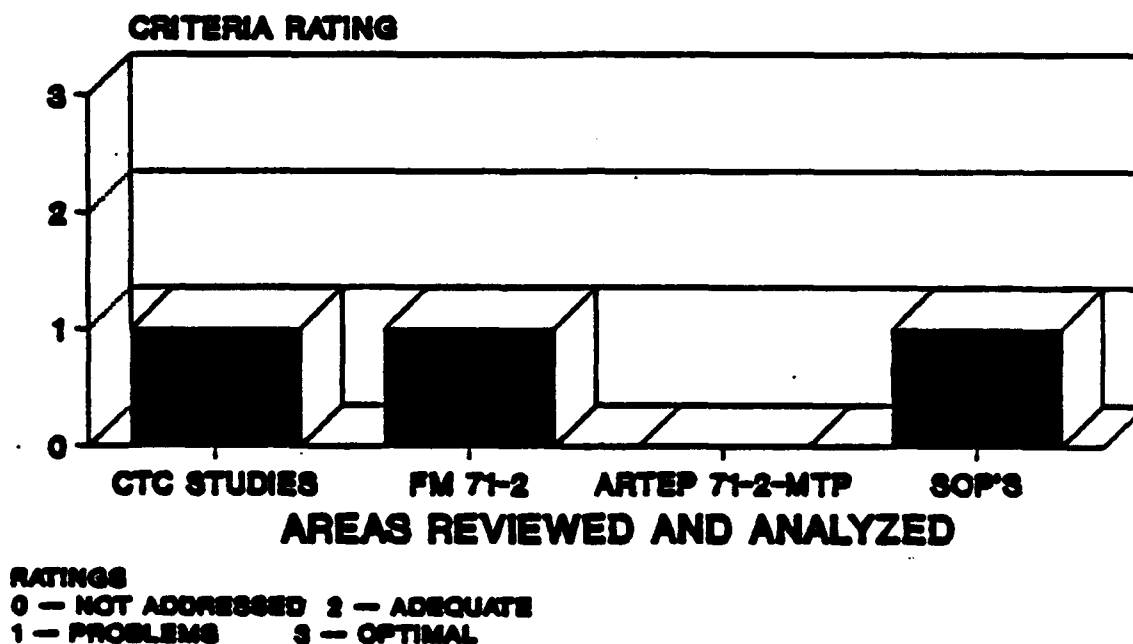


Figure 4-15

**Criteria 15:** ESTABLISHED IN ADEQUATE QUANTITY (CONTROL MEASURES)

**ANALYSIS SUMMARY** (Primary Problem Areas: Doctrinal/TTP manuals, and unit training):

Like other control measure problems, this criteria suffers from a lack of offensive direct fire planning as part

of the scheme of maneuver. Limited TTP discussion in the publications appears to be the major problem for poor execution at the NTC.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

The studies and O/C comments indicate a substantial failure in establishing an adequate number of direct fire control measures. For example, one study states that commanders did not integrate adequate control measures into their plan 77.3% of the time (both defense and offense)<sup>48</sup>

FM 71-2 and SOPs (Criteria Rating - 1 Problems):

Limited discussion appears in these manuals on this criteria. Each publication addresses the necessity of establishing control measures in adequate quantity, but their discussion focuses on movement and not on direct fire control measures. In addition, there is little TTP available to assist commanders in determining how to develop enough control measures especially for offensive direct fire operations.

ARTEP 71-2-MTP (Criteria Rating - 0 Not Addressed):<sup>3</sup>

The MTP does not address this criteria in any of its subtasks. This lack of an appropriate training task may be

a major cause of the identified performance problems in units participating at the NTC.

**ADDITIONAL COMMENTS:**

Determining what is adequate is a difficult task. The addition of a MTP evaluation task that specifically measures control measure effectiveness, and includes identification of adequate and inadequate number of control measures, could assist in solving the problem.

## **EASILY IDENTIFIABLE (CONTROL MEASURES -- CRITERIA 16)**

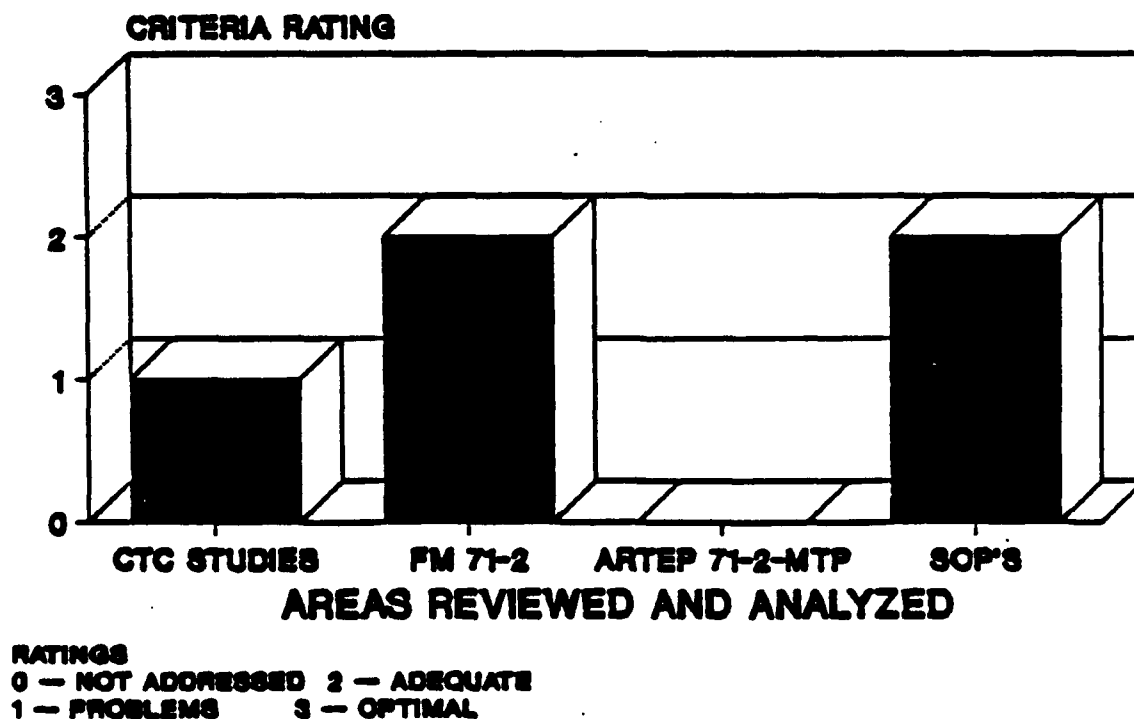


Figure 4-16

## Criteria 16: EASILY IDENTIFIABLE (CONTROL MEASURES)

ANALYSIS SUMMARY (Primary Problem Areas: Doctrinal/TTP manuals and unit training):

When commanders plan control measures, they often fail to ensure that they are easily identifiable. The maneuver manuals and unit SOPs address the majority of these problems in sufficient detail. However, the MTP makes no specific reference to this criteria or its problems. NTC observations also indicate unit training shortfalls in the designation and preparation of easily identifiable control measures.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

As discussed earlier, during offensive operations, most units fail to establish direct fire control measures. When units establish direct fire control measures, they usually do so off a 1:50 scale map. They also attempt to place graphic control measures on recognizable terrain. Problems occur for several reasons:

First, they fail to have their reconnaissance verify and validate the location of the control measures.

Second, they fail to adjust control measures to changes in weather and visibility.

Third, units fail to plan for the use of alternate types of direct fire control measures (eg. visual, audio)

Finally, units fail to disseminate control measures and their changes.

49

FM 71-2 and SOPs (Criteria Rating - 2 Adequate):

Both emphasize the need to establish identifiable control measures, although they do not address their comments in terms of offensive direct fire control measures. Both publications address the necessity of reconnaissance to confirm or deny established control measures. Both also discuss adjustments in control measures due to weather and visibility limitations. It appears that there is adequate emphasis on this criteria, but the emphasis is not oriented to offensive direct fire operations.

ARTEP 71-2-MTP (Criteria Rating - 0 Not Addressed):

The lack of discussion in training doctrine may be one reason for the identified problems. Without a training standard or task, units will normally not train to it. This lack of discussion also highlights a disconnect between maneuver and training doctrinal requirements.

ADDITIONAL COMMENTS:

Problems appear in both the manuals and unit training. Maneuver doctrine is adequate in terms of the require-

ment. However, TTP could be developed to illustrate offensive situations with a representative example of this criteria. In addition, development of a MTP evaluation task may reinforce the issue during training.

## FACILITATES DIRECT FIRES ON ID'D ENEMY LOCATIONS (CONTROL MEASURES - CRITERIA 17)

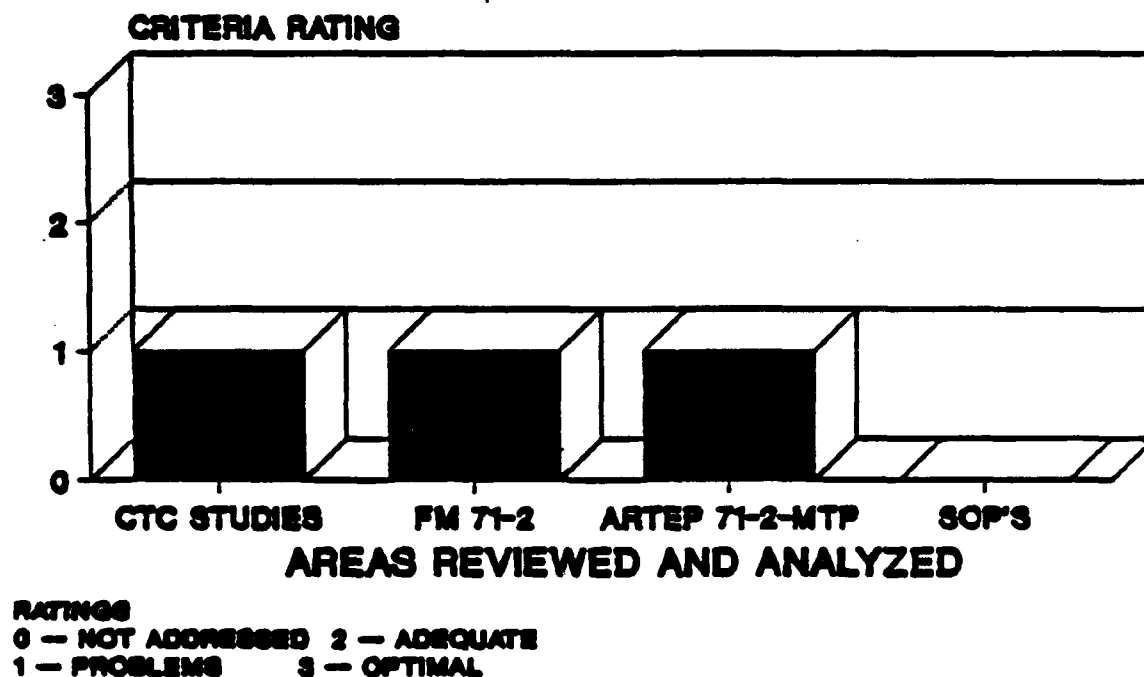


Figure 4-17

**Criteria 17: FACILITATES DIRECT FIRES ON IDENTIFIED ENEMY LOCATIONS (CONTROL MEASURES)**

**ANALYSIS SUMMARY** (Primary Problem Areas: Doctrinal/TTP manuals and unit training):

When commanders establish control measures, there are numerous problems in ensuring that they facilitate direct fires on known or suspected enemy positions. The doctrinal manuals contain very little discussion on the criteria, but they address the concept. The SOPs contain no specific comments involving this criteria. The current trend in SOPs is to depend on play and battle books that give the units a cookie cutter approach to a situation. This problem appears to be a combination of doctrine and unit training shortfalls.

**NTC STUDIES AND O/C OBSERVATIONS** (Criteria Rating - 1 Problems):

O/C observations indicate the following problems (when control measures are established):

First, control measures are not normally established on templated enemy positions.

Second, these control measures normally involve indirect and not direct fire control measures.



Third, failures in the R&S planning and execution process prevent the adjustment of control measures based on confirmed enemy locations.

Finally, when units make adjustments based on updated intelligence, they normally fail to pass these changes on to their subordinate elements.

50

FM 71-2 ARTEP, 71-2-MTP (Criteria Rating - 1 Problems):

51 These manuals have little discussion on this criteria. This shortfall corresponds with the overall reconnaissance problems in both manuals.

UNIT SOPs (Criteria Rating - 0 Not Addressed):

The lack of discussion, in SOPs on this criteria may be because of their current emphasis on play and battle books. SOPs can assist in training, but they also can stifle planning and METT-T analysis.

ADDITIONAL COMMENTS:

Problems with this criteria stem from general reconnaissance shortfalls in doctrine and unit training. Manuals need more TTP discussion on integrating the reconnaissance effort with the direct fire operations.

# DESIGNATED TO PREVENT FRATRICIDES (CONTROL MEASURES - CRITERIA 18)

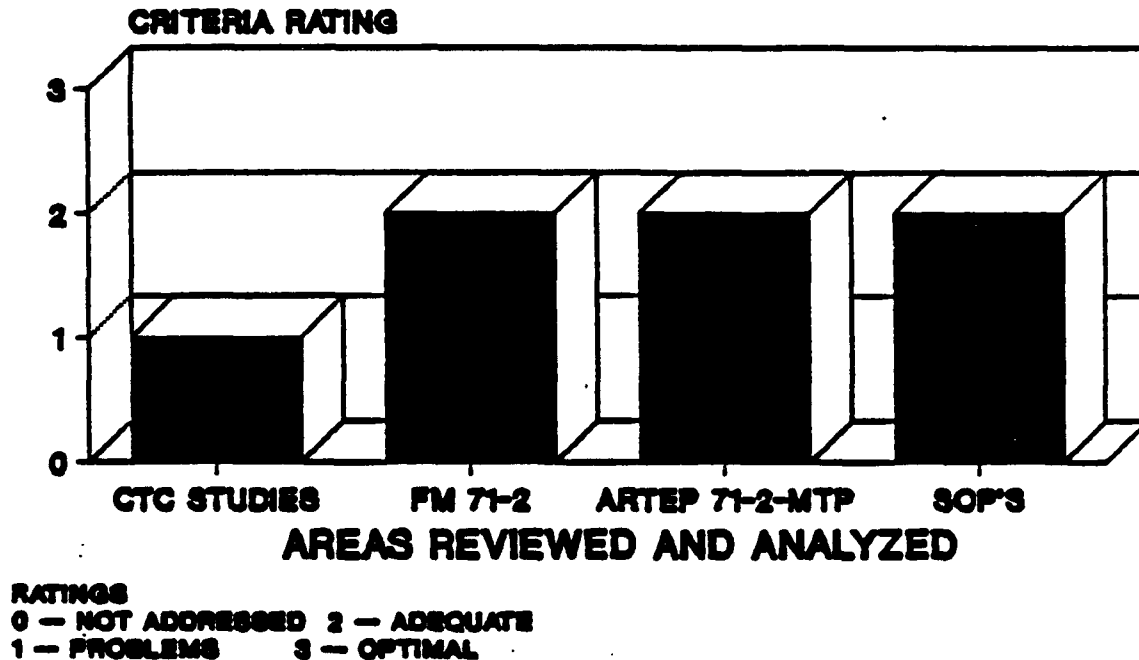


Figure 4-18

**Criteria 18: DESIGNATED TO PREVENT FRATRICIDES (CONTROL MEASURES)**

**ANALYSIS SUMMARY** (Primary Problem Areas: Doctrinal/TTP manuals and unit training):

A specific NTC fratricide study showed an unacceptable number of fratricide cases occurs during every battle. Most units fail to plan and develop control measures to

prevent fratricides. NTC observations also indicate that units may train differently when participating in a live fire exercise than when participating in an engagement simulation exercises (ESX). Doctrine and unit SOPs emphasize the need to assign fratricide control measures, but they do not discuss TTP for their development. The problem appears to involve both doctrine's lack of TTP and unit training practices.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

NTC studies indicate that "of the friendly (BLUFOR) vehicles killed in battle, at least one percent are kills by friendly [direct] fires."<sup>52</sup> This does not include live fire fratricide data. Although one percent seems small, these fratricides often occur in groups and during limited visibility. Two NTC examples can best illustrate this type of fratricide.

In a defensive battle, the commander instructed a tank platoon to drive behind the task force defensive area and establish a firing line against an OPFOR penetration in the North. As the platoon moved North, the E company engaged them thinking that the thermal signatures were enemy tanks. E company destroyed all four tanks, allowing the OPFOR to continue to move and eventually win the battle.<sup>53</sup>

During an offensive operation, a light force attacked an OPFOR position and created a breach sight for the heavy forces. As the heavy forces moved toward the breach, they engaged the dismounted light forces thinking them to be enemy. In both cases, commanders could have established control measures to prevent fratricides.<sup>54</sup>

The study discusses several other reasons for fratricides and it recommends that "fratricidal events seem to occur when there is little likelihood of OPFOR being in the area, one could consider the institution of fire control procedures for all weapons during some phase of a battle, much akin to those used for air defense ('weapons tight,' etc.)"<sup>55</sup> (Appendix A-3, page A-3-9 discusses additional TTP for this criteria)

Live fire observations show that units disregard tactical direct fire control measures established for use with live bullets in MILES force on force exercises. This indicates a training problem between MILES and live fire operations.<sup>56</sup>

FM 71-2. ARTEP 71-2-MTP and UNIT SOPs (Criteria Rating - 2 Adequate):

These publications refer to the need to establish control measures to limit fratricides. The problem, therefore, may not involve the requirement or emphasis but more likely the lack of TTP. For example, the fratricide study

explains several causes for fratricidal occurrences, but does not address ways to prevent these specific occurrences. Doctrine writers could develop TTP to do so.

**ADDITIONAL COMMENTS:**

This problem could involve unit training practices. If units differentiate ESX from live fire in terms of planning and use of their direct fire systems, they may be training incorrectly. As the Army moves away from live fire exercises towards ESX and simulators, the question must be asked: "Are we training like we will fight?"

## **ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL (CONTROL MEASURES - CRITERIA 19)**

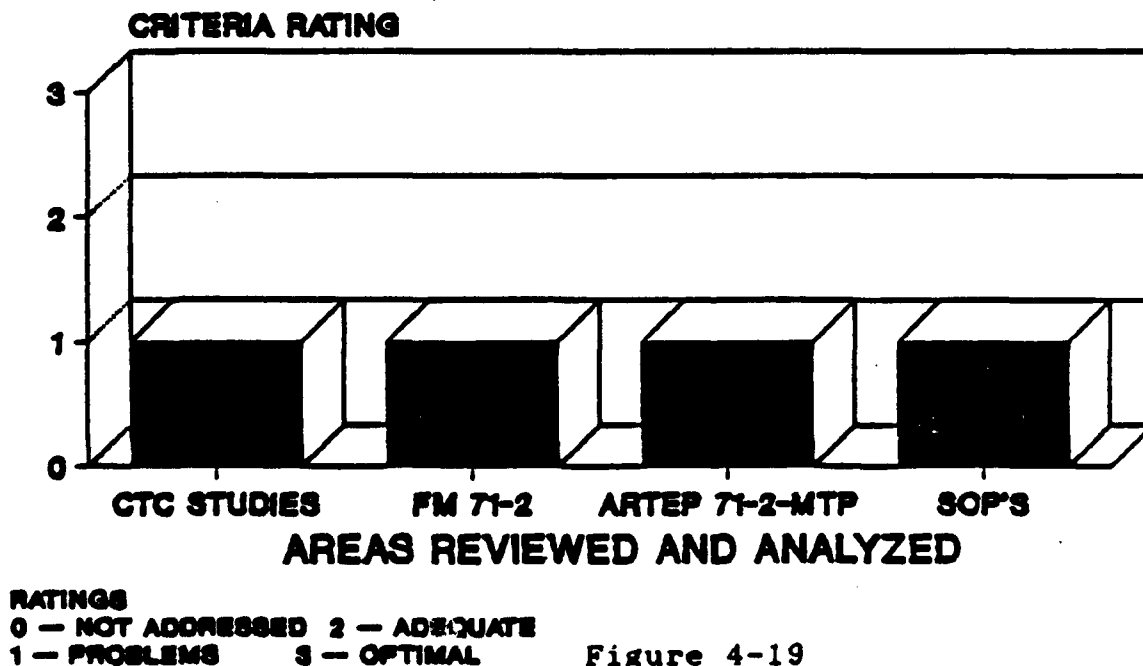


Figure 4-19

**Criteria 19: ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL**  
**(CONTROL MEASURES)**

**ANALYSIS SUMMARY** (Primary Problem Area: Doctrinal/TTP manuals):

NTC studies and observations show a lack of planned integration of direct fire systems into the active air defense operations. This shortfall also appears in doctrinal manuals and the unit SOPs. The problem appears to be one of doctrinal TTP shortfalls.

**NTC STUDIES AND O/C OBSERVATIONS** (Criteria Rating - 1 Problems):

O/C observations indicate that the planned integration of direct fire systems into the air defense plan is normally not understood or applied. Planning for air defense is normally left to the air defense officer (ADO) who only considers his organic assets. In addition, S2s normally do not analyze air avenues of approach as a regular part of their intelligence process.

OPFOR units conduct limited air IPB and establish TRPs, sectors of fire and EAs along likely enemy air avenues of approach. The result is normally the loss of BLUFOR helicopters to tank, Dragon or TOW fires. In addition, small arms fire forces the helicopters up where they become

vulnerable to the OPFOR air defense missiles. O/C observations indicate that changes in air defense weapons status are not normally disseminated to the Stinger and direct fire gunners. This has led to several air fratricides.<sup>57</sup>

**FM 71-2 (Criteria Rating - 1 Problems):**

The manual has an internal conflict that could cause problems between direct fire operations and air defense. In the planning portion (Chapter 2), there is no mention of the integration of direct fire systems into the active air defense role. The discussion focuses only on the passive aspects. The air defense chapter (Chapter 6) discusses the role of direct fire systems in the active air defense role.

None of the chapters, though, discuss who is responsible for the integration of the different systems into an air defense fire plan.<sup>58</sup> This shortfall is particularly true in the company manual where the attached air defense assets must be planned by the unit commander. This disconnect is apparent in most units' performance at the NTC.

**ARTEP 71-2-MTP (Criteria Rating - 1 Problems):**

The MTP addresses the necessity of conducting air IPB. This is the same problem as the maneuver manual with regard to who is responsible for the integrated active air defense plan.<sup>59</sup>

**UNIT SOPs (Criteria Rating - 1 Problems):**

The majority of the SOPs' discussion focuses on the need to include direct fire systems in the active air defense role. However, the SOPs leave the ADO out of most of their established planning groups. There is also no discussion designating who is responsible for the integrated air defense plan.

60

**ADDITIONAL COMMENTS:**

Direct fires should be an integral part of the synchronization of the air defense BOS. Doctrine and unit failures to discuss or achieve this integration illustrate the bigger problems involved in synchronizing the AirLand battlefield. Selective synchronization is not a viable option, but if it were, commanders should consider synchronizing those assets that they own or control (eg. direct fire systems).

Doctrine and TTP shortfalls appear to be the major problem. Doctrine needs to identify the person who has the responsibility for integrating the direct fire plan. Doctrine should contain TTP on how to do direct fire planning and it should establish a MTP task to measure that its done effectively.



## DIRECT FIRE PREPARATION (CRITERIA 20)

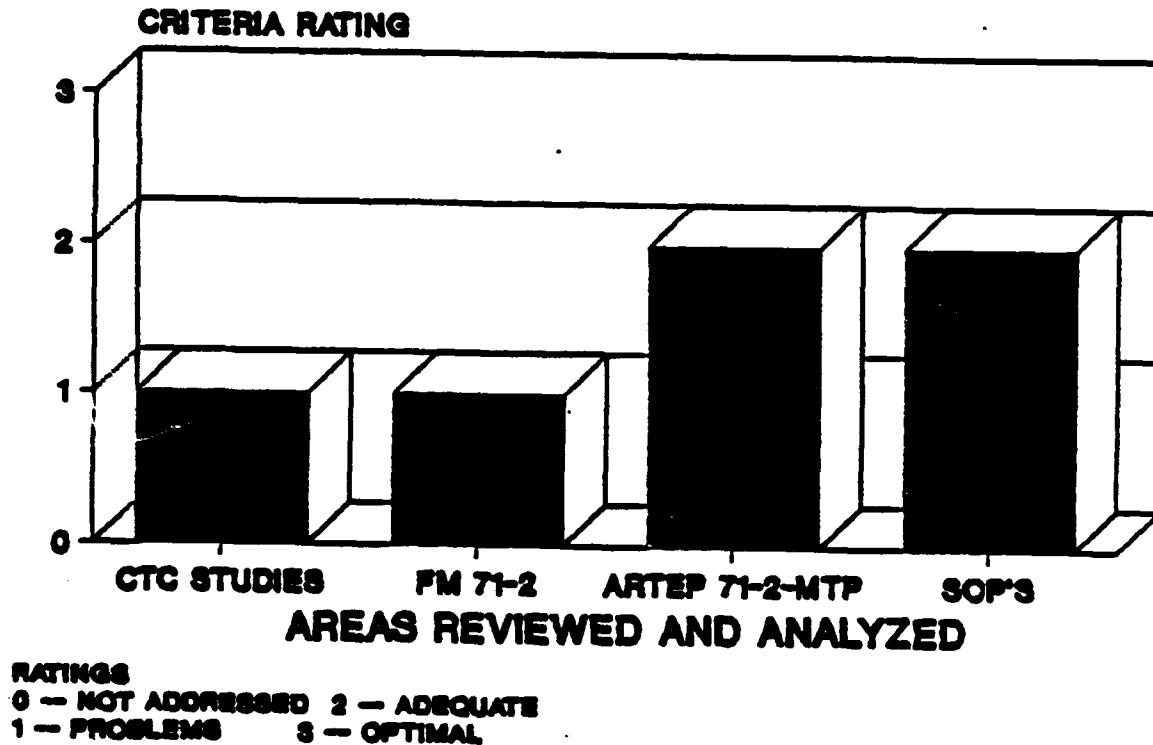


Figure 4-20

### Criteria 20: DIRECT FIRE PREPARATION

**ANALYSIS SUMMARY** (Primary Problem Areas: . Doctrinal/TTP manuals and unit training):

Units conduct little direct fire planning for offensive operations, so there is little offensive direct fire preparation. Studies and observations involving preparation

activities, when there is a plan (defensive or offensive), indicate unit shortfalls in the conduct of their direct fire preparation tasks. Doctrine and SOPs contain adequate discussion on the general concept of direct fire preparation. Although additional TTP could assist, NTC studies indicate that shortfalls in preparation tasks are due more to unit training problems than a lack of doctrine.

**NTC STUDIES AND O/C OBSERVATIONS** (Criteria Rating - 1 Problems):

Earlier criteria studies and observations highlighted the problems involving the lack of direct fire planning, and showed there is also little direct fire preparation for offensive direct fire operations. Specific direct fire preparation studies focus at the company and platoon levels. In summary, they indicate that most units and most soldiers know what should occur, but they just don't execute the tasks. For example, one observation concluded that "units seem to be performing the basic preparation tasks, [but] the more detailed or time consuming the task, the less likely it is to be performed."<sup>61</sup>

**FM 71-2** (Criteria Rating - 1 Problems):

The manual discusses preparation requirements, but it fails to specifically address direct fire aspects.

Company and platoon manuals appear to have the majority of<sup>62</sup> discussion involving preparation tasks. As noted before, they also contain limited discussion on direct fire planning during offensive operations. This lack of planning discussion hinders the preparation discussion by limiting the available TTP necessary to prepare for direct fire related preparation tasks. Examples include rehearsing the fire plan, disseminating the control measures, etc.

ARTEP 71-2-MTP and UNIT SOPs (Criteria Rating - 2 Adequate):

These publications discuss preparation more than FM71-2 does. Their discussion appears more than adequate to assist companies and platoons in their execution of general preparation tasks, but still fail to adequately address direct fire preparation for offensive operations.

# DIRECT FIRE PLAN/ CONTROL MEASURES: (DIRECT FIRE PREP - CRITERIA 21)

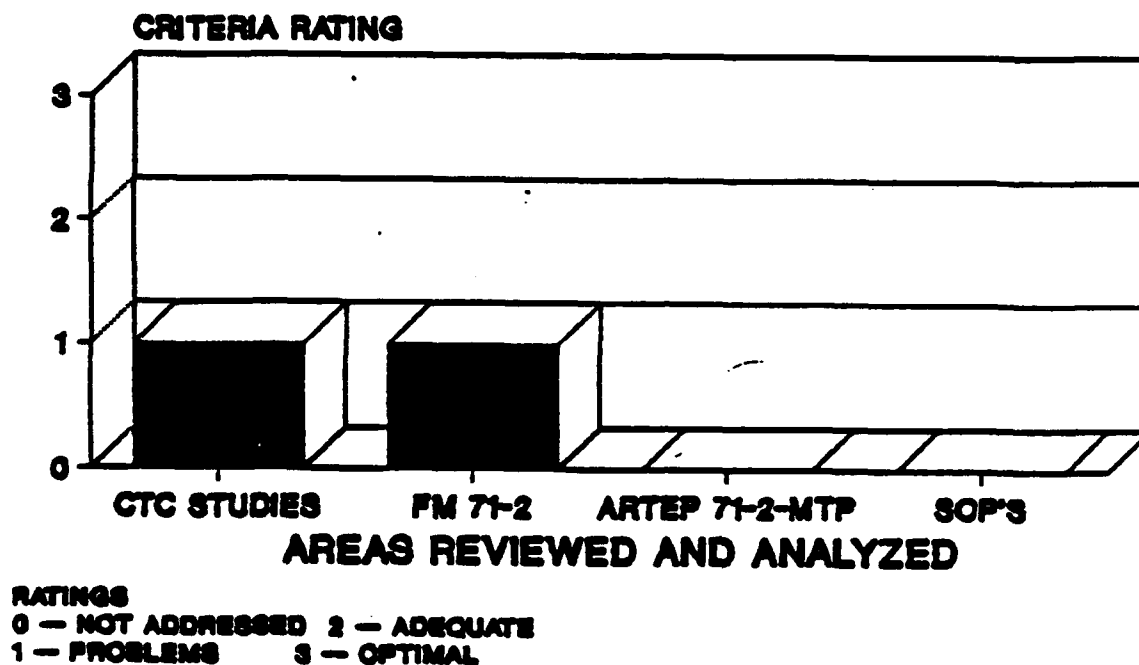


Figure 4-21

**Criteria 21: DEVELOP DIRECT FIRE PLAN/CONTROL MEASURES  
(DIRECT FIRE PREPARATION)**

**ANALYSIS SUMMARY** (Primary Problem Area: Doctrinal/TTP manuals):

There is only minimal discussion of this criteria in doctrine manuals and SOPs. Lack of discussion and emphasis in the doctrinal manuals directly affects the lack of offen-

sive direct fire planning and preparation.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

Earlier analysis discussed the lack of direct fire planning during offensive operations. These studies and O/C observations also illustrate a lack of fire plan preparation at the company and platoon levels. Even when units developed plans they failed to ensure that the plans were properly disseminated.

63

FM 71-2 (Criteria Rating - 1 Problems):

For the deliberate attack, FM 71-2 specifically requires that a "detailed plan for fire and maneuver [be] completed for an area that has been reconnoitered." This one requirement is the extent of the discussion in FM 71-2. One problem with this statement is the term "fire." In this context, "fire" implies indirect fire. Regardless of the intent of the statement, there is inadequate discussion involving this criteria. There is no TTP discussion.

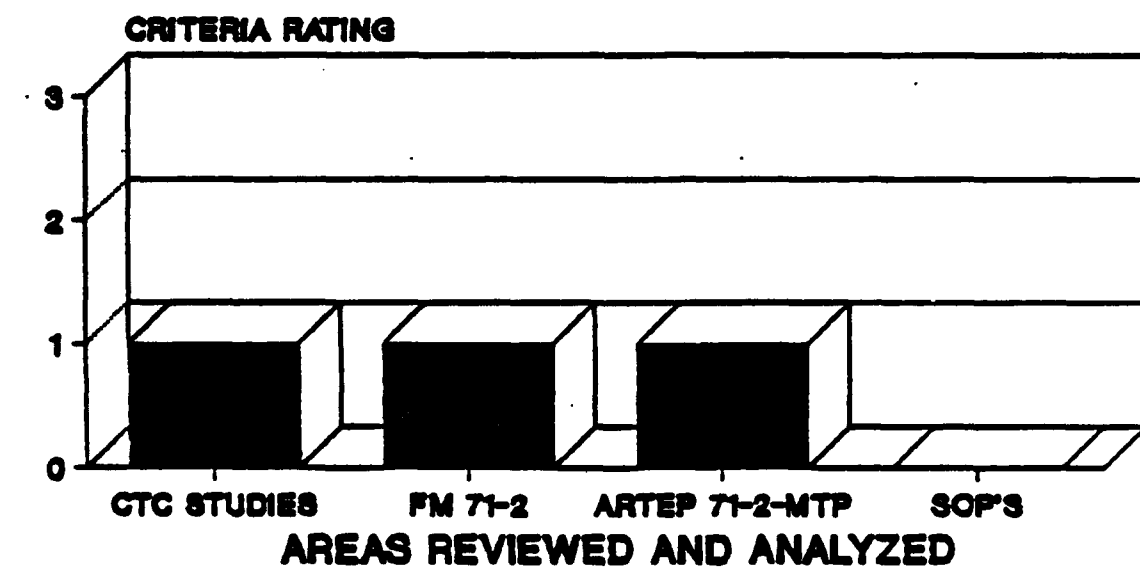
ARTEP 71-2-MTP and UNIT SOPs (Criteria Rating - 0 Not Addressed):

These publications fail to specifically address this criteria.

**ADDITIONAL COMMENTS:**

This--and other preparation tasks--suffer from the lack of offensive planning discussion and emphasis in the doctrinal manuals. Until doctrine writers solve the planning problem, preparation tasks will remain a problem.

**PLAN/CONTROL MEASURES:  
DISSEMINATED  
(DIRECT FIRE PREP - CRITERIA 22)**



**RATINGS**

0 - NOT ADDRESSED    2 - ADEQUATE  
1 - PROBLEMS        3 - OPTIMAL

Figure 4-22

**Criteria 22: PLAN/CONTROL MEASURES DISSEMINATED (DIRECT FIRE PREPARATION)**

**ANALYSIS SUMMARY (Primary Problem Area: Unit training):**

NTC studies and observations demonstrate a substan-

tial information problem. Doctrine and the SOPs have little or no specific discussion on how to disseminate planning and control measures. However, the main problem appears to be a unit training and discipline shortfall and not a doctrinal problem. Doctrine could expand its TTP discussion to help in the resolution of this training problem.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

When planning does occur, the studies and O/C observations indicate that the information is not transferred to the user level. For example, of the key task force control measures, only 35.3% of the individual gunners and crews had them. Additional study and O/C observations reinforce the belief that unit training and discipline is the real problem.  
65

FM 71-2. ARTER 71-2-MTP (Criteria Rating - 1 Problems):

All the publications have limited discussion on this criteria. This lack of discussion does not appear to be the main problem, but it does affect unit training. For example, there is no specific emphasis or TTP describing how to check on information that should have been disseminated. A possible technique would require or advise the task force commander to spot-check individual crews or gunners on the

critical control measures that should be on their range cards.

UNIT SOPs: (Criteria Rating - 0 Not Addressed):

SOPs fail to address this criteria.

ADDITIONAL COMMENTS:

As a subset to the planning criteria, this criteria suffers from the same lack of emphasis on planning for offensive direct fire operations. Although dissemination appears to be more a matter of training and unit discipline, the larger problem of a lack of emphasis on planning direct fires must be solved first. If there is no plan, there is nothing to disseminate.



# **PLAN/CONTROL MEASURES: UNDERSTOOD (DIRECT FIRE PREP - CRITERIA 23)**

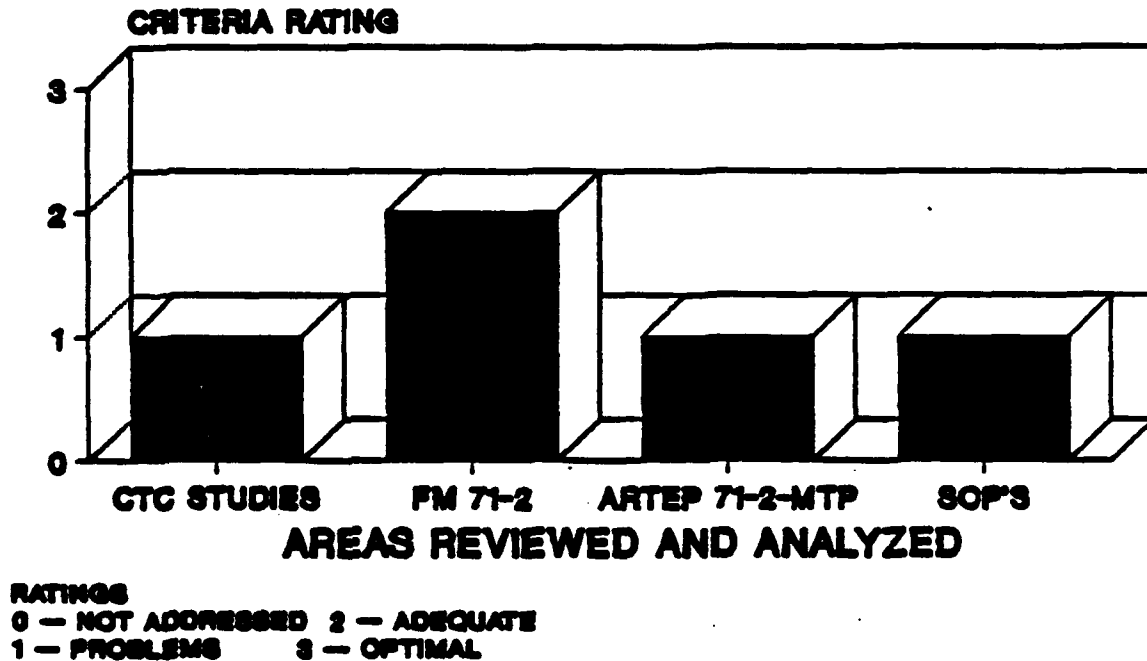


Figure 4-23

**Criteria 23: PLAN/CONTROL MEASURES UNDERSTOOD (DIRECT FIRE PREPARATION)**

**ANALYSIS SUMMARY** (Primary Problem Area: Unit training):

NTC studies and observations indicate that subordinates often fail to understand the plan or control measures. Limited discussion by all the publications does not appear

to be the main cause of the problem. Studies and observations indicate it is more a unit training problem than a doctrinal shortfall.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

Studies and observations indicate that few crews and individual soldiers know and understand the plan and its important control measures. Example problems include improper labeling of critical control measures and lack of a clear understanding of the commander's intent statement. The studies also highlight this as a unit training  
66  
problem.

FM 71-2 (Criteria Rating - 2 Adequate):

FM 71-2 specifically addresses this criteria in terms of direct fire operations in general. It does not specifically address it in terms of offensive direct fire operations, nor does it include TTP to accomplish the tasks.

ARTEP 71-2-MTP and UNIT SOPs (Criteria Rating - 1 Problems):

These documents had only minimal discussion on the criteria. Although this lack of discussion is not the main reason for the problem, it fails to emphasize the requirement or provide TTP to accomplish it.

# CO/PLT/SEC/SQD FIRE PLANS PREPARED (DIRECT FIRE PREP - CRITERIA 24)

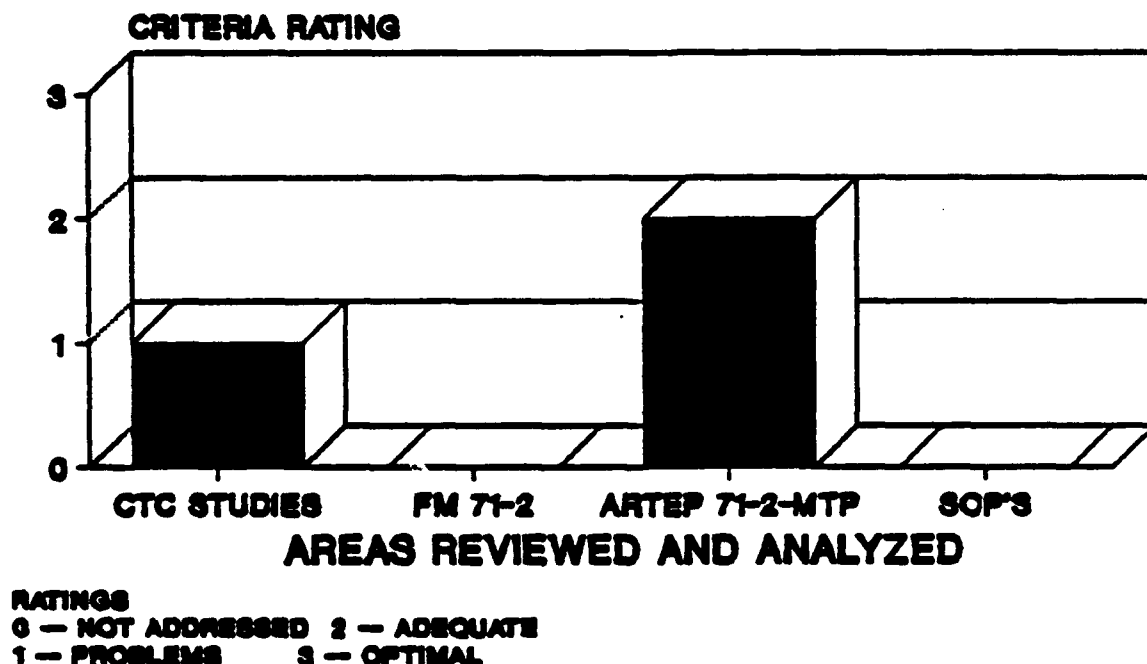


Figure 4-24

**Criteria 24:** CO/PLT/SEC/SQD FIRE PLANS PREPARED (DIRECT FIRE PREPARATION)

**ANALYSIS SUMMARY** (Primary Problem Area: Doctrinal/TTP manuals):

Problems exhibited at the NTC reflect the lack of discussion within the reviewed publications. These publica-

tions emphasize movement and positioning of forces and not the employment of their direct fire systems. The primary cause of this problem appears to be a lack of TTP discussion and emphasis.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

As discussed earlier, NTC studies and observations indicate a total lack of direct fire planning as part of the scheme of maneuver. This is especially true at the company and platoon levels. Without the requirement to plan, there is no requirement to develop a direct fire plan at any level. Observations discuss an emphasis on battle and action drills for the conduct of direct fire operations. Most units plan their movement and positioning aspects, but do not incorporate direct fire considerations. <sup>67</sup>

FM 71-2 (Criteria Rating - 0 Not Addressed):

There is no specific discussion of ensuring the preparation of subordinate unit maneuver or fire plans. At the company level, there is discussion of defensive direct fire planning, but there is no requirement or example to prepare a company direct fire plan for either the defense or the offense. At platoon level, there is extensive

discussion of defensive direct fire planning and preparation  
68  
but none for the offense.

ARTEP 71-2-MTP (Criteria Rating - 2 Adequate):

The MTP task, attack-by-fire, states: "TF prepares  
69  
for the attack...[and] complet[es] fire plans." The  
problem, based on previous references to fire plans, is that  
the discussion lends itself to "indirect" fire plans.  
Assuming it does include direct fire, none of the maneuver  
manuals discuss this requirement. Regardless, there is no  
similar discussion for fire planning in any other task.

UNIT SOPs (Criteria Rating - 0 Not Addressed):

The newer SOPs have substantial discussion on preparation.  
There is significant discussion on the requirement  
to prepare fire plans for defensive operations, but there is  
no discussion for this preparation for offensive operations.  
The SOPs place their emphasis on the use of battle drills  
70  
and not on direct fire planning.

ADDITIONAL COMMENTS:

Based on this author's personal observations, units  
that use at least a very basic fire plan substantially  
improve their direct fire performance. The value of the  
fire plan occurs during the planning and preparation phases  
and--to a limited degree--during the execution phase.

During the planning phase, a commander organizes his direct fire systems to assist in its portion of the scheme of maneuver. During the preparation phase, the commander uses his fire plan to assist in supervision of the preparation and to facilitate direct fire rehearsals. During the execution phase, the fire plan assists the commander by allowing him to use and adjust direct fire control measures.

## INDIVIDUAL WEAPON'S RANGE/SKETCH CARDS PREPARED (DIRECT FIRE PREP - CRITERIA 25)

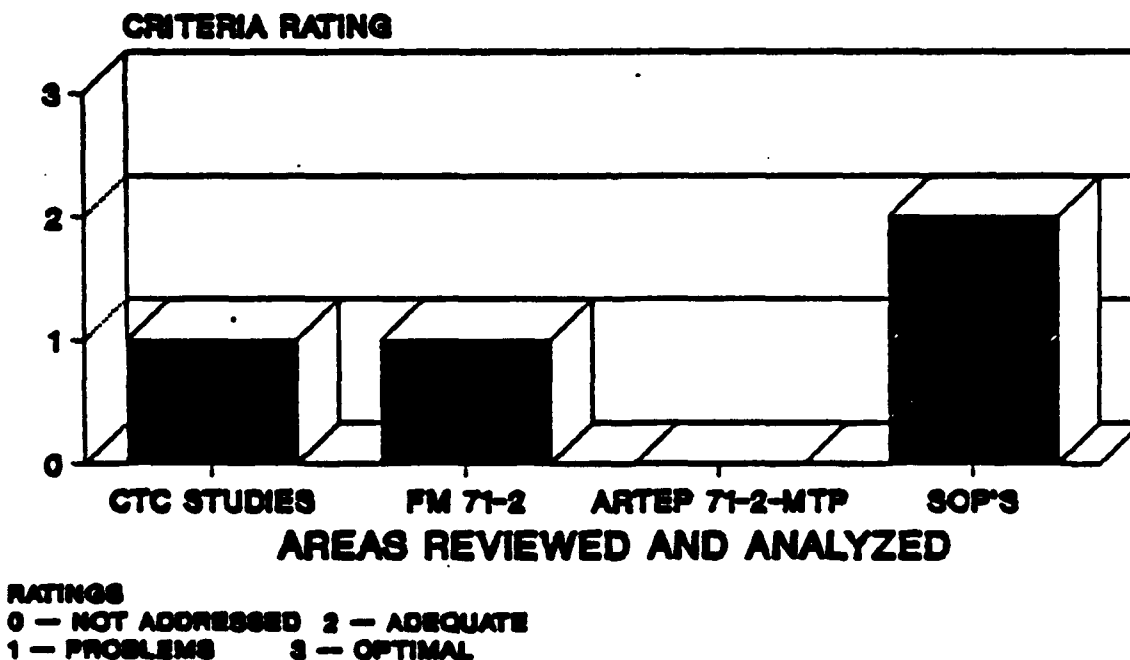


Figure 4-25

**Criteria 25: INDIVIDUAL WEAPON'S RANGE/SKETCH CARDS PREPARED (DIRECT FIRE PREPARATION)**

**ANALYSIS SUMMARY** (Primary Problem Areas: Doctrinal/TTP manuals and unit training):

NTC studies spotlight a significant problem involving this criteria for both the defense and the offense. The problem includes the lack of direct fire planning discussion in doctrine and a unit training problem when they develop a plan. FM 71-2 has no specific discussion on this criteria, but there is extensive discussion and TTP in the lower level manuals for defensive operations. There are also significant discrepancies in the TTP discussions among lower level manuals.

**NTC STUDIES AND O/C OBSERVATIONS** (Criteria Rating - 1 Problems):

When commanders prepare a fire plan (either offense or defense), there are significant problems in preparation of subordinate range and sketch cards. In general, range cards and sketch cards are not to doctrinal standard, they are not consistent with the fire plan, and they are not adequately checked by their supervisors. For example, an O/C picked up a soldier's M60 range card and saw a water tower in the center of the card. (There are no water towers

in live fire at the NTC) When questioned about the water tower, the soldier stated that he had brought the range card from home station because his platoon leader and his NCO's<sup>71</sup> told him that they expected range cards to standard.

**FM 71-2 (Criteria Rating - 1 Problem):**

FM 71-2 lacks specific comments, but the company and platoon manuals contain extensive TTP discussion for defensive operations. There are also several significant problems here:

First, the TTP discussion is not consistent between manuals. As a consequence a BFV's range card is significantly different from a tank sketch card.<sup>72</sup> Second, there is no discussion of their use in an offensive operation. Finally, terminology discrepancies exist between all the manuals.<sup>73</sup>

**ARTEP 71-2-MTP (Criteria Rating - 0 Not Addressed):**

There is no specific requirement for this at task force level. There is also no requirement to supervise or check that this criteria has been completed by their subordinates.

**UNIT SOPs (Criteria Rating - 2 Adequate):**

The SOPs allude to this criteria and there is adequate discussion at lower level SOPs..



### ADDITIONAL COMMENTS:

This lack of discussion at task force level is a problem, because there should be some discussion involving supervision of this criteria. Without supervision, then commanders cannot ensure that the range and sketch cards have been properly prepared.

## **PREP FOR COMBAT CHECKS (PCC) (DIRECT FIRE PREP - CRITERIA 26)**

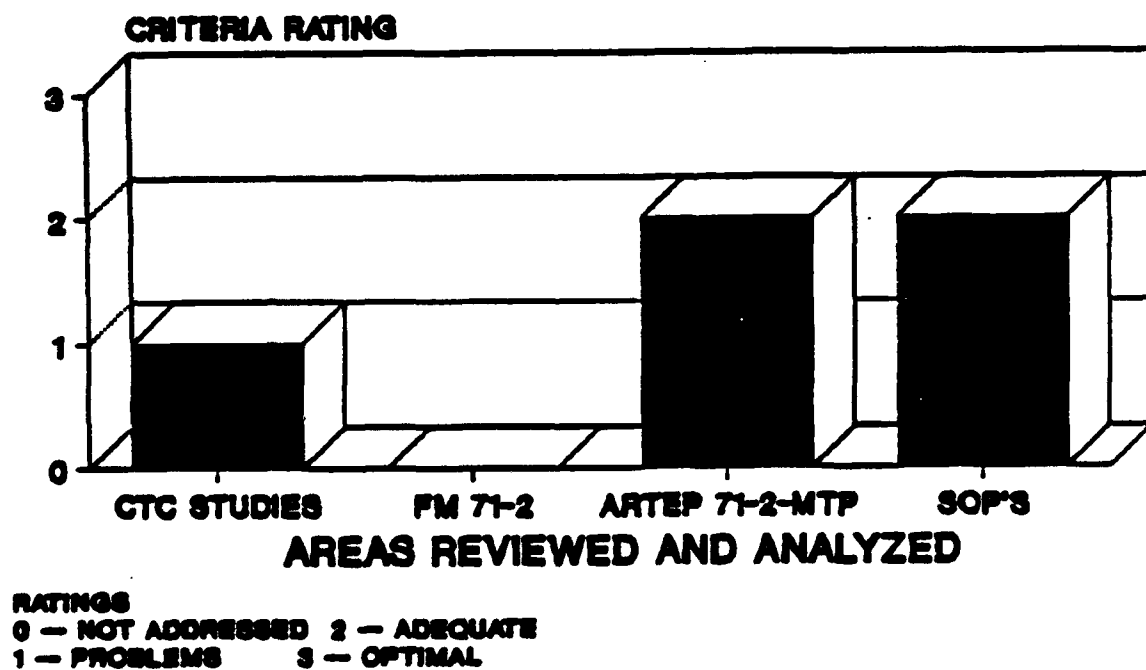


Figure 4-26

**Criteria 26: PREPARATION FOR COMBAT CHECKS (PCC) (DIRECT FIRE PREPARATION)**

**ANALYSIS SUMMARY** (Primary Problem Area: Unit training):

NTC studies and observations indicate a substantial unit quality control problem. Doctrine appears to be adequate; the problem is primarily a unit training and discipline problem.

**NTC STUDIES AND O/C OBSERVATIONS** (Criteria Rating - 1 Problems):

One NTC study that PCC's were being conducted 88.9% of the time at company level and 72.4% of the time at platoon level. Further studies indicate that "the quality of these PCC's are at the most part questionable."<sup>74</sup> The studies and observations highlight numerous other examples of improperly performed PCC. In all cases it appears to be<sup>75</sup> a unit training and discipline problem.

**FM 71-2:** (Criteria Rating - 0 Not Addressed)

FM 71-2 does not discuss this criteria, but lower level manuals contain extensive TTP discussion. FM 71-2 needs at least a comment that emphasizes PCC to ensure a<sup>76</sup> common approach between all manuals.

**ARTEP 71-2-MTP and UNIT SOPs (Criteria Rating - 2 Adequate):**

MTPs and SOPs both have specific discussion on this criteria. None of the manuals focus on the offense, but they do discuss PCC for direct fire operations.

**ADDITIONAL COMMENTS:**

Doctrine appears to be adequate for this criteria. Unit training and discipline needs to improve to solve the problem.

## **PREP FOR FIRE CHECKS (DIRECT FIRE PREP - CRITERIA 27)**

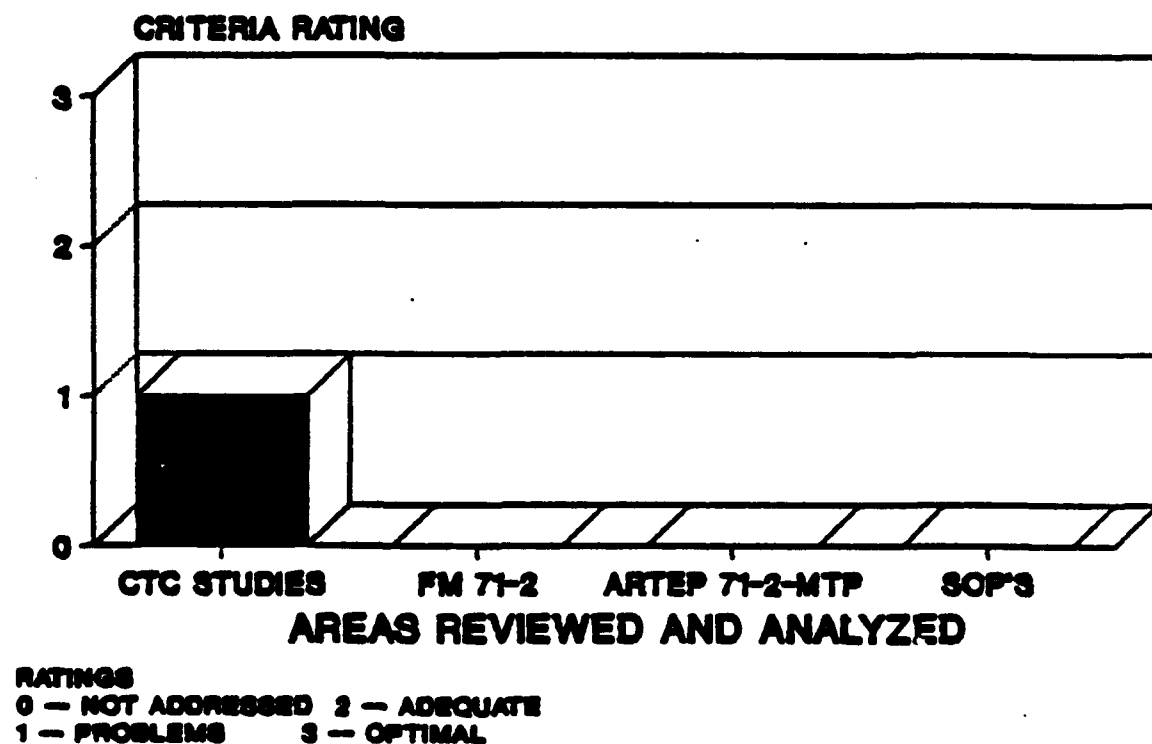


Figure 4-27

**Criteria 27: PREP FOR FIRE CHECKS (DIRECT FIRE PREPARATIONS)**

**ANALYSIS SUMMARY** (Primary Problem Area: Unit training):

NTC studies highlight a quality control and knowledge problem regarding this criteria. Although the task force level publications do not specifically comment on this criteria, subordinate manuals have significant TTP discussion. The problem appears to involve unit training and discipline shortfalls.

**NTC STUDIES AND O/C OBSERVATIONS**(Criteria Rating - 1 Problems):

Observations indicate that units understand the concept of preparation for fire checks, but many crews do not know the specific methods and techniques necessary to properly conduct the checks.

77

**FM 71-2, ARTEP 71-2-MTP and UNIT SOPs**(Criteria Rating - 0 Not Addressed):

Although no specific comments are in the task force level publications, the subordinate manuals have optimal TTP discussion on this criteria. The problem does not appear to be a doctrinal one.

# DIRECT FIRE REHEARSALS CONDUCTED (DIRECT FIRE PREP - CRITERIA 28)

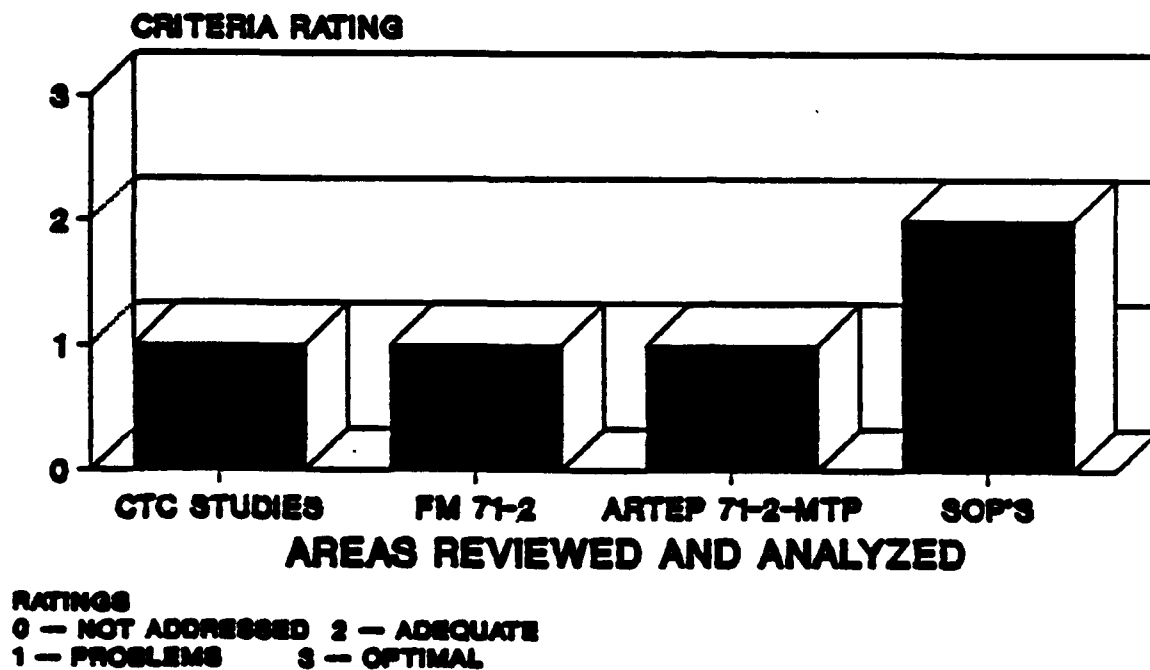


Figure 4-28

**Criteria 28: DIRECT FIRE REHEARSALS CONDUCTED (DIRECT FIRE PREPARATION)**

## **ANALYSIS SUMMARY:**

The conduct of rehearsals appears to have a significant impact on the outcome of a battle. The lack of rehearsals, as highlighted by NTC studies and observations, may be due to a lack of TTP discussion in doctrine. SOPs

struggle with this doctrinal shortfall, but the fixes depend on the units.

NTC STUDIES AND O/C OBSERVATIONS (Criteria Rating - 1 Problems):

There is a large data base that spotlights an extremely "low incident of rehearsals."<sup>78</sup> This is especially true for those involving direct fire systems. The quality of these rehearsals is also questionable. Most units struggle with three major questions when attempting to conduct a rehearsal:

First, what constitutes an adequate rehearsal?

Second, what should be rehearsed (eg. movement, direct fires, indirect fires)?

Finally, what rehearsal techniques exist, especially given a short timeframe?

Based on O/C comments, it appears that this is not just a unit training problem.<sup>79</sup>

FM 71-2 and ARTEP 71-2-MTP (Criteria Rating - 1 Problems):

Both discuss the necessity of conducting a rehearsal, but both are unclear about rehearsal content and type. The subordinate manuals also lack sufficient TTP in this area.

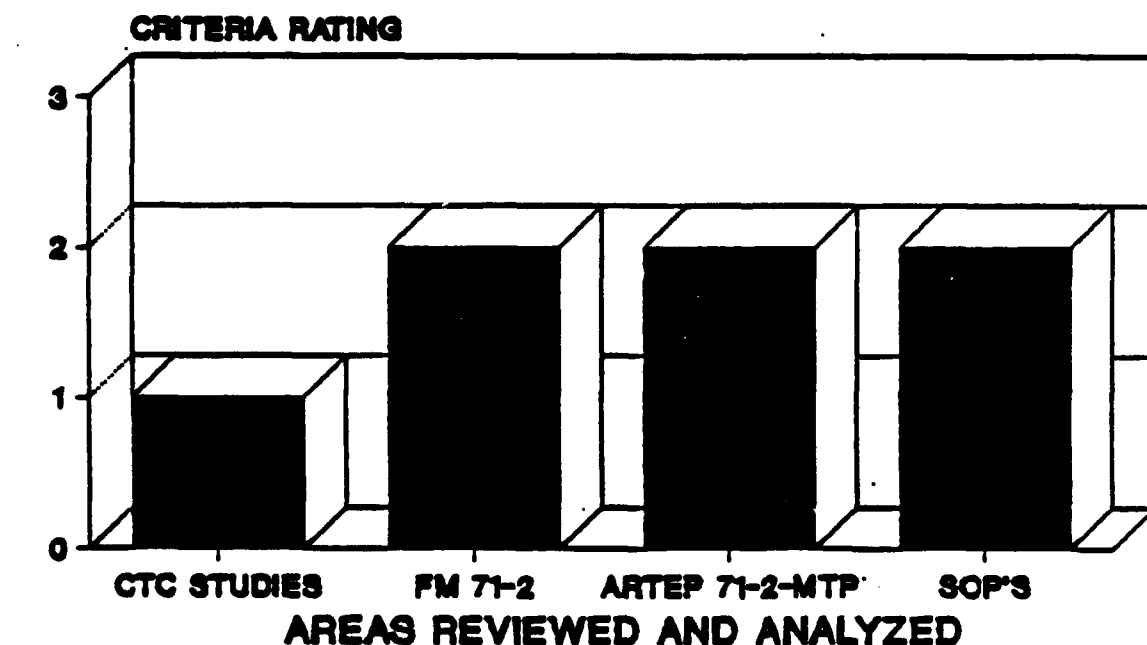
**UNIT SOPs (Criteria Rating - 2 Adequate):**

SOPs and, in particular, newer SOPs seem address the problem, although their discussion falls short of adequate TTP. In addition, the discussion depends on the expertise of the unit. It also is not always followed by the unit's subordinates. <sup>80</sup> The discussion does not address direct fire rehearsals for offensive operations.

**ADDITIONAL COMMENTS:**

Development of doctrinal TTP would assist in reducing this problem. This study's definition of this criteria in Appendix A-3 could assist in this TTP development process.

**SUPERVISION  
(DIRECT FIRE PREP - CRITERIA 29)**



**RATINGS**  
0 - NOT ADDRESSED 2 - ADEQUATE Figure 4-29  
1 - PROBLEMS 3 - OPTIMAL

**Criteria 29: SUPERVISION (DIRECT FIRE PREPARATION)**

**ANALYSIS SUMMARY** (Primary Problem Areas: Doctrinal/TTP manuals and unit training):

NTC observations and studies indicate a significant problem involving supervision in general, and not just with direct fire. The publications highlight the need to supervise, but they fail to identify TTP that can improve effectiveness. Studies also indicate a knowledge problem that affects the ability of leaders to supervise properly. In summary, it appears to be both a doctrine and unit training problem.

**NTC STUDIES AND O/C OBSERVATIONS** (Criteria Rating - 1 Problems):

NTC studies and observations highlight three major reasons for poor supervision:

First and foremost is fatigue. A continuous operations (CONOPs) study conducted at the NTC showed that the key leaders were the ones who go with the least amount of sleep. As a consequence, key leaders spend the majority of their time trying to plan, brief, and execute. They then try to rest during the preparation phase. This occurs at all levels. So the eventual supervisor--the one checking



during the preparation phase--ends up being the assistant  
81  
squad or team leader.

The second reason is a lack of knowledge. As with the PCC and preparation for fire checks, there are a significant number of leaders who do not know how or what to check.

The final reason is a lack of training on how to supervise. This includes the development of techniques that allow division of supervisory responsibility, identification of how to conduct staff visits, how to develop a supervision schedule, etc. The studies also suggest that the problems  
82  
include both unit and doctrinal shortfalls.

FM 71-2, ARTEP 71-2-MTP and UNIT SOPs (Criteria Rating - 2 Adequate):

All the publications specifically highlight the necessity to supervise, but they fail to address the reasons for poor supervision. Development of TTP could help to solve some of the above problems.

ADDITIONAL COMMENTS:

Perfection of this task could resolve many of the other preparation criteria problem areas.

## ANALYSIS SUMMARY

<u>CRITERIA</u>	<u>PROBLEM AREA(S)</u>
1. DIRECT FIRE PLANNING	- DOCTRINAL EMPHASIS AND UNIT TNG
2. COMMANDERS GUIDANCE:	- DOCTRINE
3. - INTENT (TYPE FIRES + PURPOSE)	- DOCTRINE
4. - IDENTIFIES DIRECT FIRE R&S. PRIORITY (PIR/IR)	- DOCTRINE AND UNIT TNG
5. - IDENTIFIES ENGAGEMENT PRIORITY	- DOCTRINE AND UNIT TNG
6. - IDENTIFIES WEAPON'S POSITION/ INTEGRATION	- DOCTRINE AND UNIT TNG
7. - IDENTIFIES TECHNIQUES OF FIRES	- DOCTRINE AND UNIT TNG
8. - IDENTIFIES FIRE PATTERNS	- DOCTRINE AND UNIT TNG
9. - DESIGNATES DIRECT FIRE REHEARSAL TYPE/TIMES	- DOCTRINE
10. - DESIGNATES WEAPONS MAINTENANCE PRIORITY	- TNG DOC AND UNIT TNG
11. - DESIGNATES CRITICAL CONTROL MEASURES	- DOCTRINE
12. CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC):	- DOCTRINE (EMPHASIS)
13. - ESTABLISHED FOR ACTIONS ON THE OBJECTIVE	- DOCTRINE
14. - ESTABLISHED FOR MOVEMENT PHASE-	DOCTRINE
15. - ESTABLISHED IN ADEQUATE QUANTITY	- DOCTRINE
16. - EASILY IDENTIFIABLE	- DOCTRINE AND UNIT TNG
17. - FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION	- DOCTRINE AND UNIT TNG
18. - DESIGNATED TO PREVENT FRATRICIDE	- DOCTRINE UNIT TNG
19. - ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL	- DOCTRINE
20. DIRECT FIRE PREPARATION	- DOCTRINE AND UNIT TNG
21. - DIRECT FIRE PLAN/CONTROL MEASURES:	- DOCTRINE
22. * DISSEMINATED	- UNIT TNG
23. * UNDERSTOOD	- UNIT TNG
24. - COMPANY/PLATOON/SECTION/SQUAD FIRE PLANS PREPARED	- DOCTRINE

**ANALYSIS SUMMARY (continued)**

- |     |   |                         |
|-----|---|-------------------------|
| 25. | - INDIVIDUAL WEAPON'S RANGE/<br>SKETCH CARDS PREPARED | - DOCTRINE AND UNIT TNG |
| 26. | - PREPARATION FOR COMBAT CHECKS                       | - UNIT TNG              |
| 27. | - PREPARATION FOR FIRE CHECKS                         | - UNIT TNG              |
| 28. | - DIRECT FIRE REHEARSALS<br>CONDUCTED                 | - DOCTRINE AND UNIT TNG |
| 29. | - SUPERVISION   | - DOCTRINE AND UNIT TNG |

## CHAPTER FOUR

### ENDNOTES

1. B.H.Liddell Hart. Strategy, (New York: Frederick A. Praeger, 1968), p.347.

2. See appendix A for criteria lists and definitions

3. All quotes and comments discussed in this paragraph come directly from appendix B-1. Study and O/C comments are organized by criteria. This criteria is specifically on page B-1-A-1 (study comments) and page B-1-B-1 (O/C comments). Further endnote comments will only state appendix and page number listings.

4. The majority of information used for analysis was extracted from appendix B-2 (FM 71-2 analysis). Many of the analysis conclusions were based on a compilation of problems, shortfalls and discrepancies outlined in this appendix and original source manuals. It is not based on just one specific comment. Therefore a review of the entire appendix or, if necessary, the original source may be necessary to fully understand the analysis conclusion. (Note: The appendix was developed to limit original source references) The remaining titles for each criteria will not be endnoted, but the analysis process is the same. Specific comments and examples will be endnoted.

5. FM 71-2 limits fire planning (and it is unclear if it is direct or indirect) to the limit of a units reconnaissance, page 3-53. FM 71-1 and FM 17-15 do not specifically address direct fire planning considerations, although discussion does allude to the need to fire plan some aspects. FM 7-7J specifically states that fire planning should "rely more on fire commands and prearranged SOP signals....," page C-15. An additional comment: units do not achieve flexibility by not planning. Identification of several enemy course of actions and the establishment of control measures or specific actions to counter these possible enemy courses of actions achieves flexibility while still maintaining control. Good reconnaissance also assists in refining and adjusting a direct fire plan.

6. Appendix D of this study contains two sections on terminology discrepancies. Section I lists terms defined in FM 101-5-1 but have different definitions or usage in

other manuals. Section II lists terms not defined in FM 101-5-1 but are used in the doctrinal manuals.

For example, both FM 71-1 (page 3-12) and FM 71-2 (page 3-26) use the term "Support-by-Fire." The term is not defined in FM 101-5-1 or in FM 71-1. A graphic symbol discrepancy example involves the symbol for the "Attack-by-fire position." The symbol is not shown in FM 101-5-1 but it is shown in FM 71-2, page 3-42. The same symbol is used in FM 71-1, page 3-4 to represent an "Overwatch position." In addition FM 71-2 states that "Overwatch positions are usually indicated graphically as checkpoints," page 3-41. Reference Appendix D section II for a complete list of terms not defined in FM 101-5-1 but are being used in the doctrinal manuals.

7. For example, FM 71-2 discusses "Company Team Missions in the Attack," page 3-27, while FM 71-1 discusses "Types of Operations," but not missions.

8. The majority of information used for analysis was extracted from appendix B-3 (ARTEP 71-2-MTP analysis). Many of the analysis conclusions were based on a compilation of problems, shortfalls and discrepancies outlined in this appendix and original source manuals. It is not based on just one specific comment. Therefore a review of the entire appendix or if necessary the original source may be necessary to fully understand the analysis conclusion. (Note: The appendix was developed to limit original source references) The remaining titles for each criteria will not be endnoted, but the analysis process is the same. Specific comments and examples will be endnoted.

9. See ARTEP-71-2-MTP page 5-27 or appendix B-3 page B-3-B-3.

10. The majority of information used for analysis was extracted from appendix B-4 (SOP analysis). Many of the analysis conclusions were based on a compilation of problems, shortfalls and discrepancies outlined in this appendix and original source manuals. It is not based on just one specific comment. Therefore a review of the entire appendix or if necessary the original source may be necessary to fully understand the analysis conclusion. (Note: The appendix was developed to limit original source references) The remaining titles for each criteria will not be endnoted, but the analysis process is the same. Specific comments and examples will be endnoted.

11. See appendix D, page D-14 or FM 101-5-1, p. 1-44.

12. For example, FM 71-2, section "Forms of Maneuver," (page 3-5 or appendix B-2, page B-2-B-9); "Movement Techniques and Formations," (page 3-10 or page B-2-B-10); "Concept of the Operation...Maneuver," (page 3-22 or B-2-B-12); "attack-by-fire position, page 3-41 or B-2-B-19, and other movement control measures, page 3-40 to 3-43 or B-2-B-18,19.

13. See appendix B-1, page B-1-A-1.

14. See "Military decision-making process" FM 71-2, p2-15. All manuals including FM 71-2 focus the majority of their discussion on "Staff Actions" and not on "Commanders Action." this manual emphasis is also translated to the institutional training side. The advance courses, CAS3 and CGSC all fail to discuss or instruct the "commanders action."

15. For purposes of non-attribution, the persons or institutions that they represented will not be cited. Their comments may or may not have reflected official policy, but they did represent the perceived guidance that they were working under during the preparation of the manuals.

16. See appendix B-1, page B-1-A-2

17. See appendix B-3, page B-3-B-4, "condition paragraph."

18. Martin Goldsmith. "Applying the NTC Experience: Tactical Reconnaissance," RAND (Santa Monica, California: The RAND Corporation, October 1987) p. 68.

19. The percentage was taken from a conversation with the OPFOR S-3 on his use of reconnaissance elements.

20. NTC Observation Division Study, "Reconnaissance, Counter-reconnaissance, and Scout Tasks," report submitted to CALL, Ft Leavenworth, KS 1989, p. A-1.

21. See appendix B-4, page B-4-B-10, card 510 and page B-4-B-11, appendix e to annex c.

22. See appendix B-1, page B-1-A-2.

23. Some will argue that "engaging the closest threat" is all the guidance that is necessary. Although if stated by the commander it could act as guidance (it is not normally stated) but it is not the only way. For example a commander engagement priority may be "tanks kill tanks, BFs

kill BMPs." When a tank sees a BMP, he crosstalks to the adjacent BFV, and continues to search for enemy tanks.

24. See appendix B-2, page B-2-B-25, general comments for criteria # 5.

25. See FM 71-1, p2-38.

26. See NTC live fire data base, CALL, Ft Leavenworth, KS.

27. See appendix B-1, page B-1-A-3.

28. See appendix B-1, page B-1-B-1. These comments were summaries from my review of NTC take-home package discussions.

29. See appendix B-2, page B-2-B-1, or FM 71-2, page 2-34.

30. See appendix B-2, page B-2-A-25,26, criteria #7.

31. See appendix B-1, page B-1-B-1. These comments were summaries from my review of NTC take-home package discussions.

32. See appendix B-2, page B-2-B-1.

33. See appendix B-2, page B-2-A-25,26.

34. See appendix B-1, page B-1-B-1. These comments were summaries from my review of NTC take-home package discussions.

35. See appendix B-4, page B-4-B-9, card 505.

36. See appendix B-1, page B-1-B-1. These comments were summaries from my review of NTC take-home package discussions.

37. For this criteria the CSS related MTP tasks were also reviewed. None of these CSS tasks discussed this criteria.

38. See appendix B-1, page B-1-B-1. These comments were summaries from my review of NTC take-home package discussions.

39. For example see direct fire control measures in appendix B-2, page B-2-B-17 or FM 71-2 p3-39.

40. These comments were taken from my personal experiences as an O/C.

41. See appendix B-1, page B-1-A-4.

42. For example see appendix B-2, page B-2-B-25.

43. For example, FM 71-1, p3-23, FM 7-7J, p.C-15.

44. See appendix B-1, page B-1-B-1. These comments were summaries from my review of NTC take-home package discussions.

45. See MTP task #7-1-3007, appendix B-3, page B-3-B-2.

46. See appendix B-1, page B-1-B-1. These comments were summaries from my review of NTC take-home package discussions.

47. See appendix B-3, page B-3-B-2 or MTP page 5-18, appendix B-2, page B-2-B-15 or FM 71-2, p3-33; appendix B-2, page B-2-B-19 or FM 71-2, page 3-41.

48. See appendix B-1, page B-1-A-6.

49. This is a summary of O/C take-home comments.

50. See appendix B-1, page B-1-B-1. These comments were summaries from my review of NTC take-home package discussions.

51. See appendix B-2, page B-2-B-9 or FM71-2 page 3-4, appendix B-2, page B-2-B-11 or FM 71-2, p3-19.

52. See appendix B-1, page B-1-A-6.

53. Taken from my observations as an O/C at the NTC.

54. Ibid

55. See appendix B-1, page B-1-A-6.

56. See appendix B-1, page B-1-A-6. These illustrations were taken from the authors personal experiences as an O/C.

57. See appendix B-1, page B-1-B-1. These comments were summaries from my review of NTC take-home package discussions.



58. For example, reference FM 71-2, "Air defense artillery officer," page 2-7, and Section V. "Air Defense Support," pages 6-24 through 6-28, or Appendix B-2, pages B-2-B-2 and B-2-B-24. Comment: Direct fire systems can play a significant role in enhancing the active air defense response if they are properly integrated with the air defense systems. Planning this integration with the designation of direct fire control measures (e.g. TRP) on likely enemy air avenues of approach can enhance response time (because the air guards are oriented on the designated TRPs) and the command and control aspects to achieved massed fires.

59. Also reference ARTEP 71-2-MTP, Task #7-1-3911, "Perform Air Defense Operations," page 5-140, or Appendix B-3, page B-3-B-12.

60. For example, see appendix B-4, page B-4-B-1 and page B-4-B-6.

61. See appendix B-1, page B-1-A-7.

62. See appendix B-2, page B-2-B-25.

63. See appendix B-1, page B-1-A-7.

64. See appendix B-2, page B-2-B-20 or FM 71-2, page 3-52.

65. See appendix B-1, page B-1-A-7 criteria 22.

66. Ibid, criteria 23.

67. See appendix B-1, page B-1-A-8.

68. See appendix B-2, pages B-2-B-25,26 (reference criteria #1 comments).

69. See appendix B-3, page B-3-B-4.

70. For example, reference Appendix B-4, page B-4-B-10, card 570; appendix B-4, page B-4-B-9, card #200; appendix B-4, page B-4-B-5, "offense."

71. See appendix B-1, page B-1-A-9. Example is taken from the authors personal experience as an O/C.

72. See appendix B-2, page B-2-B-26, para 3.

73. See appendix D.

- 74. See appendix B-1, page B-1-A-9, criteria #26.
- 75. Ibid.
- 76. See appendix B-2, page B-2-B-25, criteria #26.
- 77. See appendix B-1, page B-1-A-10, criteria #27.
- 78. Ibid.
- 79. See appendix B-1, page B-1-A-10,11.
- 80. Some units have good SOPs and some have poor SOPs. All units suffer in that subordinates do not always know or follow their SOPs whether good or bad.
- 81. NTC Observation Division Combined Arms Assessment Team Report: "CONOPS at the National Training Center." report submitted to CALL, Ft. Leavenworth KS., 1988.
- 82. See appendix B-1, page B-1-A-11,12.

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

Maneuvers are the movements of troops in the theater of action, and they are the swift and ordered movement on the scene of action of tactical units of all sizes. They do not constitute action. Action follows them.

Colonel du Picq--Battle Studies

1

### INTRODUCTION

This chapter has four sections:

- \* Conclusions for the supporting research questions.
- \* A summary of the overall findings on why task force commanders are unable to employ their direct fire systems during offensive operations (the main research question).
- \* Recommendations for the problem areas.
- \* Recommendations concerning additional research or study. This final area is important because this thesis does not answer all the areas affecting the employment of direct fire systems during offensive operations.

## CONCLUSIONS

**Research Question 1.** What are the measurable criteria involving the employment of direct fire systems during offensive operations?

This MMAS thesis used three current sources (NTC briefing, BG Wass de Czege's firepower paper, and Sub-BOS study) to develop criteria that affect the employment of direct fire systems during offensive operations. This criterion was used to analyze three different source documents (current studies, doctrine, and unit SOPs). As a side benefit, this criteria could assist commanders and doctrine writers in the development of direct fire TTP, although the criteria have several limitations:

- \* The criteria are incomplete. There are additional criteria that also play a significant role in the employment of direct fire systems during offensive operations.

- \* Second, this thesis did not analyze all the identified criteria. This delimitation does not reduce the significance or invalidate the unanalyzed criteria. In fact, the intelligence criteria (process), especially during offensive operations, is imperative to the successful development of a scheme of maneuver and the employment of the direct fire systems.

- \* Third, there may be a tendency to use these criteria as an approved solution checklist. Although they

address the major considerations involved with employing direct fire systems, they are not a comprehensive list. In addition, they are designed to be analyzed and applied in accordance with the situation and not an all inclusive list of actions.

**BOTTOM LINE:** THIS THESIS' CRITERIA WERE DEVELOPED TO ASSIST IN THE ANALYSIS AND COMPARISON OF DIFFERENT TYPES OF SOURCES (CURRENT STUDIES, DOCTRINE, AND UNIT SOPs). HOWEVER, THEY CAN ALSO ASSIST DOCTRINE WRITERS AND COMMANDERS IN THE DEVELOPMENT OF DIRECT FIRE TTP. WHEN USED AS TTP, THE CRITERIA SHOULD BE USED AS A GUIDE AND NOT AS A SOLUTION.

**Research Question 2.** Do current studies and NTC direct fire data identify performance failures when compared against the direct fire criteria?

An individual can study doctrine, unit Standard Operation Procedures (SOPs), and unit training anywhere in the world. However, the National Training Center (NTC) provides an environment that allows the study of direct fire planning, preparation, and execution tasks using a realistic combat scenario. U.S. Army training institutions recognize this aspect and have made extensive use of NTC studies to develop solutions to problems facing today's Army.

This thesis also uses current NTC direct fire studies to assist in problem identification. Since 1985, NTC studies have identified problems in direct fire planning, preparation, and execution. These same studies also indicate that the problem is getting worse and not better. The

obvious question is why? The units have better systems and newer doctrine. Units are making repeated rotations that should improve their home station training. Yet, the problem remains. In Engagement Simulation Exercises (ESX), most units cannot kill more than 40% of the Opposing Forces (OPFOR) with their direct fire systems, and in Live Fire Exercises (LFX), units are showing a downward trend in<sup>2</sup> direct fire performance.

Besides spotlighting the poor execution of direct fire systems, the studies identified specific problems in the areas this thesis examined (planning, control measures,<sup>3</sup> and preparation) and the intelligence process. These problems include:

- \* Inadequate TTP for the conduct of direct fire operations at the task force level.
- \* Incomplete direct fire planning by task force and lower level commanders.
- \* Inadequate or improper use of control measures to assist in the employment and command and control of direct fire systems.
- \* Inadequate and improper conduct of direct fire preparation tasks.

The most serious problem has been the task force commanders' failure to integrate direct fire planning into their overall scheme of maneuver. Direct fire systems play

an integral role in the conduct of maneuver. The failure to plan and emphasize the use of these systems along with the movement of forces, employment of indirect and air defense fires, etc. causes a failure in the synchronization of the battlefield systems. It is difficult to synchronize several different systems without a plan that includes all of them. This lack of planning contributes to the other problem areas discussed above.

**BOTTOM LINE:** NTC STUDIES INDICATE THAT MAJOR PROBLEMS EXIST IN ALL CRITERIA AREAS (INTELLIGENCE PROCESS, PLANNING, CONTROL MEASURES, PREPARATION AND EXECUTION). HOWEVER, THE OVERRIDING PROBLEM IS THE FAILURE BY TASK FORCE COMMANDERS TO EMPHASIZE THE USE OF THEIR DIRECT FIRE SYSTEMS AND/OR TO INTEGRATE THEM INTO THE SCHEME OF MANEUVER.

**Research Question 3.** Do current U.S. Army doctrinal manuals provide sufficient discussion involving the identified direct fire criteria? Do shortfalls or discrepancies exist?

Our doctrinal manuals contribute to and may be a primary cause of the task force direct fire problem. Specifically, maneuver doctrine and training doctrine suffer from numerous direct fire criteria shortfalls and discrepancies.<sup>4</sup> The most significant shortfall is the lack of task force level direct fire TTP. This TTP failure is particularly acute for direct fire planning considerations of task force commanders.

Maneuver and training manuals fail to adequately discuss or emphasize the integration of direct fire systems into the scheme of maneuver. These manuals discuss the movement and positioning of direct fire systems, but they do not discuss how to employ, command, and control systems in position. While there is significant discussion of employment and command and control of indirect systems and air defense systems, there is almost none for direct fire systems.

This lack of emphasis could be one reason that NTC studies find that commanders fail to plan for the employment of their direct fire systems during offensive operations. However, doctrine is not totally without direct fire TTP. There are significant direct fire planning and employment TTP in the maneuver defensive chapters and training manuals defensive tasks. With minor adjustments, commanders could interpolate defensive direct fire TTP and apply them to offensive direct fire operations.

For example, "actions on the objective" could be planned in the same manner and detail as the defense of a "battle position."<sup>5</sup> "Movement to contact or the movement phase" could be planned in the same manner as a "defense in sector."<sup>6</sup> In both these cases, the only planning limitation is the lack of in-depth leader reconnaissance to confirm or deny the plan. Therefore, for the offense, the role of



the reconnaissance elements and the R&S plan play a significant role.

This relationship between direct fire planning, preparation, and execution with the intelligence process (IPB, DST, R&S) is another area that has limited TTP discussion in the manuals. It is also an area that NTC studies identify as a major problem area for most task force commanders.

Another problem involved is the numerous discrepancies both within a manual and between manuals. These discrepancies include differing manual formats, organization, TTP and--more significantly--the different uses of doctrinal and non-doctrinal terms.<sup>7</sup> Although not necessarily the major problem involving direct fire operations, these discrepancies still cause confusion and misunderstanding.

Training doctrine has a major shortfall that affects the employment of direct fire systems during offensive operations. ARTEP 71-2-MTP does not list a task with conditions statement that includes the "attack of a deliberate defense," "attack of a strongpoint" or "attack of an urban area." This shortfall limits the planning, preparation, and execution necessary to train these more difficult tasks. It also limits the development of TTP necessary to attack such positions.

Doctrine and TTP problems may only be the initial portion of the direct fire problem. As discussed earlier, some direct fire TTP exist for defensive operations, but NTC studies indicate a continuing problem with defensive direct fire operations.<sup>8</sup> So there are other problems other than lack of TTP. These other problems cannot be fully identified or solved until our manuals develop adequate direct fire TTP and consistent terminology. Once units have the necessary TTP, then further studies can identify training shortfalls and other problem areas.

**BOTTOM LINE:** DOCTRINAL MANUALS MAY BE THE INITIAL MAJOR PROBLEM AREA, BUT IT IS NOT THE ONLY PROBLEM AREA. THEY CONTAIN NUMEROUS DISCREPANCIES AND SHORTFALLS THAT CAN CAUSE CONFUSION, MISUNDERSTANDING, AND LIMIT TRAINING NECESSITIES. THEY ALSO FAIL TO EMPHASIZE THE USE OF DIRECT FIRE SYSTEMS AND/OR PROVIDE THE TTP NECESSARY TO PROPERLY INTEGRATE DIRECT FIRE SYSTEMS INTO THE OFFENSIVE SCHEME OF MANEUVER.

**Research Question 4.** Do current unit SOPs provide sufficient discussion involving the identified direct fire criteria? Do shortfalls or discrepancies exist?

Unit SOPs have shown substantial growth in terms of content, emphasis, and TTP over the older SOPs that merely reiterate doctrinal manual statements. The development and wide use of unit battle and play books demonstrate this change. Unfortunately, the SOPs suffer from several problems. Like doctrine, they fail to contain the TTP necessary

to integrate direct fire systems into the offensive scheme of maneuver.

Unit SOPs fail to adequately address the fundamental issues of the established direct fire criteria. Consequently, they often contribute to the direct fire problem instead of solving it.

Additional failures include:

- \* Most SOPs are often not read by subordinates.
- \* The SOPs misuse doctrinal and include non-doctrinal terms.
- \* They often conflict with doctrine, and when used regularly, preclude the reading of doctrine itself.
- \* How much the manuals and TTP content used is unit-dependent.
- \* The newer SOPs that include more TTP are not prevalent among all units, especially those who have not been to the NTC.

**BOTTOM LINE:** UNIT SOPs HAVE IMPROVED IN CONTENT AND USE BUT STILL HAVE SHORTFALLS AND--MORE SIGNIFICANTLY--STILL FAIL TO PROVIDE THE NECESSARY TTP TO PROPERLY INTEGRATE DIRECT FIRE SYSTEMS INTO THE OFFENSIVE SCHEME OF MANEUVER.

**Research Question 5.** Do current unit training practices include the identified direct fire criteria? Do shortfalls exist?

A complete review and analysis of unit training practices was beyond the scope of this thesis. However, this thesis attempted, when possible, to identify those criteria that may suffer primarily from unit training shortfalls.<sup>9</sup> Many of the unit training problems identified by NTC studies may have been caused by or affected by the doctrine and unit SOP shortfalls and discrepancies.

However, several of the direct fire preparation criteria (see Chapter Four, page 150) problem areas had substantial TTP discussion in the lower level manuals. In addition, NTC studies specifically identify some of the criteria shortfalls as unit training problems. The significance of this finding is that development and publication of adequate TTP may not solve the identified direct fire problem. Development and publication can help in the correction process, but it is obvious that significant unit training problems need to be identified and corrected before the direct fire problem can be solved. Doctrinal manuals can provide the different ways, but a unit needs to be properly trained to produce the proper means.

**BOTTOM LINE: SPECIFIC UNIT TRAINING PROBLEMS EXIST, ESPECIALLY THOSE INVOLVING DIRECT FIRE PREPARATIONS. DEVELOPMENT OF TTP TO INTEGRATE DIRECT FIRE SYSTEMS INTO THE OFFENSIVE SCHEME OF MANEUVER MAY NOT SOLVE THE OVERALL DIRECT FIRE PROBLEM.**

**Research Question 3.** How do the shortfalls identified above (if any) compare with each other? (trends, similarities, differences)

The most significant trend is the lack of TTP and emphasis on integrating the direct fire systems into the offensive scheme of maneuver. Other trends and similarities include:

- \* Misuse of doctrinal and non-doctrinal terms.
- \* Numerous internal and external discussion discrepancies involving direct fire operations.
- \* Failure to designate responsibility for the integration of direct fire systems into the active air defense role.
- \* Continued problems in direct fire performance at the NTC.
- \* Increased discussion involving direct fire TTP for defensive operations.

The most significant differences include:

- \* Training practices between live fire operations and engagement simulation exercises.
- \* Doctrine's extensive discussions on some preparation criteria TTP and unit's poor performance in preparation tasks.

**BOTTOM LINE: THE MOST SIGNIFICANT TRENDS INCLUDE THE FAILURE TO EMPHASIZE THE INTEGRATION OF DIRECT FIRE SYSTEMS AS PART OF THE SCHEME OF MANEUVER AND THE FAILURE TO PROVIDE THE NECESSARY TTP TO DO SO.**

**Research Question 7. What impact do these shortfalls have on the proper employment of direct fire operations during the offensive? Are they significant?**

The shortfalls compound themselves because doctrinal manuals affect the commanders' priorities and the commanders' priorities affect unit training and SOP development. Manual shortfalls and discrepancies affect commanders' emphasis and unit training in the following ways:

- \* First, it limits training practices because of the lack of TTP involving the integration of the direct fire systems into the offensive scheme of maneuver. Consequently, commanders struggle with the "how to" and not the "how well" aspects of training.

- \* Second, it can cause confusion in training because of terminology abuses and discrepancies between the different levels of manuals.

- \* Third, discrepancies between maneuver and training manuals (MTP's) force commanders to pick and choose which training task is more important, those listed in maneuver doctrine or those contained in training doctrine (MTP's). (eg. Assault of a hasty defense or assault of an enemy strongpoint)

\* Fourth, lack of more difficult training conditions (attack of a strongpoint) encourages commanders to train on tasks that are less difficult such as attack against a hasty defense.

With these hindrances and shortfalls, commanders must shape their training programs to achieve success on the battlefield. To compensate for these shortfalls, especially in TTP, unit commanders develop unit SOPs. However, this thesis shows that commanders' SOPs repeat the doctrinal manuals' problems.

Commanders can solve some of their problems by interpolating comparable direct fire TTP to offensive operations and if they conduct realistic unit training. This interpolation coupled with realistic unit training will develop usable TTPs and SOPs. It can determine what is successful and what is not.

**BOTTOM LINE:** THE COMBINATION OF DOCTRINAL MANUAL SHORTFALLS AND DISCREPANCIES AND UNIT TRAINING PROBLEMS HAVE A SIGNIFICANT IMPACT ON THE CONDUCT OF DIRECT FIRE OPERATIONS DURING THE OFFENSE.

## SUMMARY

The primary purpose of this paper was to determine why commanders have been unable to properly employ their direct fire systems during the conduct of offensive operations. In answering this and the several supporting questions this thesis limited its review to personal observations at the NTC, written studies, doctrine, and unit SOPs.

Based on the review and analysis of these sources (studies, doctrine, and unit SOPs), this thesis found no significant difference in their contribution to the direct fire problem. Work on fixing each is needed. More specifically, more direct fire TTP needs to be added to doctrine and unit SOPs. In addition, commanders need to emphasize the employment of their direct fire systems during offensive operations. Until we fix these things we will not be able to improve direct fire performance.

## RECOMMENDATIONS

These recommendations address the problems identified during the review and analysis portion of this thesis (doctrine shortfalls, lack of TTP, training techniques, etc.).



**GENERAL RECOMMENDATION: MODIFY MANEUVER BOS TO READ MANEUVER (MOVEMENT AND DIRECT FIRE).**

The first recommendation applies to doctrine and training. The major problem is a matter of emphasis and TTP shortfalls involving the integration of direct fire systems into the scheme of maneuver. This thesis recommends that the current BOS list be modified to reinforce the role of direct fire systems. This modification would change the wording of the BOS "Maneuver" to "Maneuver (Movement and Direct Fires)." (Although, other types of fires are also associated with maneuver [eg. indirect, CAS], they are discussed in the fire support BOS.)

This minor change is completely in line with the definition of maneuver.<sup>10</sup> It also emphasizes the role of direct fire systems in scheme of maneuver. For example, After Action Reviews (AARs) at the NTC would specifically review "movement and direct fire" aspects as part of the AARs review of the BOS systems. Unit training and evaluation exercises also will serve to emphasize this modified BOS. This small modification could substantially increase the commander's direct fire awareness and emphasis. Once awareness and emphasis is achieved, then the development of applicable TTP should follow.

**MANEUVER DOCTRINE RECOMMENDATIONS: MANEUVER DOCTRINE SHOULD BE REVISED TO EMPHASIZE OFFENSIVE DIRECT FIRE OPERATIONS USING A SHORT AND LONG TERM PLAN.**

This study identified numerous discrepancies and shortfalls involving all levels of doctrinal manuals. Most of these problems cannot be corrected until these manuals are revised. This study recommends the development of a short and long term plan to correct these problems.

**SHORT TERM PLAN:**

- \* REVISE INSTITUTIONAL TRAINING EMPHASIS.
- \* DEVELOP DIRECT FIRE TTP.
- \* ADOPT THIS STUDY'S DIRECT FIRE CRITERIA AND TTP AS A STARTING BASE FOR DOCTRINAL TTP DEVELOPMENT.
- \* DEVELOP A STANDARDIZED TERMINOLOGY LIST.

**LONG TERM PLAN:**

- \* REVISE DOCTRINE DEVELOPMENT AND FIELDING PROCESS.
- \* ADD DOCTRINAL CHANGES, TTP AND TERMINOLOGY TO THE APPROPRIATE DOCTRINAL MANUAL DURING THE REVISION PROCESS.

In the short term, training institutions--especially those conducting small group instruction and Pre-Command Courses (PCC)--should revise their instruction to emphasize the importance of direct fire operations. In the short term, instructors can help the doctrine writers and commanders in the development of direct fire TTP. Observer controller (O/C) comments and recommendations also can help in the TTP development process. O/Cs can help by testing newly developed techniques during the units' training cycle at the CTCs.

The institutions that write doctrinal manuals may want to consider adopting this study's direct fire criteria, as a starting point for the development of direct fire TTP

(recognizing the criteria limitations). Doctrine writers may also want to consider developing a standardized direct fire plan for task force and below levels.

A direct fire plan should be standardized in terms of format, marginal data, and other common information (eg. direct fire criteria). Authors should develop a direct fire matrix to include all direct fire systems, control measures, decision points, and unit and gunner actions. This matrix could be synchronized with other matrices now in use.

Development of these two tools will improve the planning, preparation, and--ultimately--the execution of a unit's direct fire systems. Step by step use of these tools during training will enhance direct fire employment considerations and emphasis. These tools also can aid in the conduct of direct fire rehearsals.

In the short term, instructors and O/Cs should consider the identification and standardization of direct fire terminology. Instead of inventing new terms, they should use existing terms. These terms should be included in FM 101-5-1 with appropriate definitions.

Standardization of direct fire terms should occur at all levels, not just task force. To aid in this process, this study extracted direct fire terms currently in use in the doctrinal manuals (Appendix D). The list of terms contains various definitions that appear in different manuals for each term. (Not all the terms have a definition.)

The long term plan involves the doctrinal revision process. First, development of manuals should be done from higher to lower to achieve standardization of direct fire operations at all levels. Without this change, manuals will continue to experience problems in all phases and types of operations, not just direct fire.

Second, the revision process should include a review of the revised manual by all BOS institutions, not just maneuver arms institutions. It also should include staffing at the Combat Training Centers.

As part of the revision process, the changes, TTP, and standardized terminology developed during the short term plan should be integrated into the revised manuals. Looking forward to AirLand Battle Future, and the concept of the non-linear battlefield, revision efforts should emphasize the direct fire role in any future offensive operations.

#### TRAINING DOCTRINE RECOMMENDATIONS:

- \* TRAINING DOCTRINE SHOULD BE REVISED TO EMPHASIZE OFFENSIVE DIRECT FIRE OPERATIONS USING SHORT AND LONG TERM PLANS.

- \* AN MTP SHOULD BE DEVELOPED THAT SPECIFICALLY ADDRESSES DIRECT FIRE OPERATIONS.

- \* MTP CONDITION STATEMENTS SHOULD CONTAIN OPFOR DEFENSIVE SCENARIOS OF "DELIBERATE DEFENSE," "DEFENSE OF A STRONGPOINT," AND "DEFENSE OF AN URBAN AREA."

Training doctrine contains some direct fire TTP discussion. Unfortunately, it is all in one task: "Attack-by-Fire." Unless a unit performs this task or interpolates the information in this task to another task, the direct fire discussion will not apply in other tasks. To reinforce the importance of direct fire operations, Mission Training Plan (MTP) tasks should be developed that specifically addresses direct fire operations. A specific direct fire MTP (like the fire support MTP) will increase the emphasis concerning direct fire operations and it could provide the necessary TTP.

MTPs also conflict with doctrine in the sense that tasks and requirements outlined in maneuver doctrinal manuals are not always the same as those outlined in the MTP. A revised manual fielding and reviewing process can eliminate or reduce these problems.

Observations at the NTC suggest that units tend to train more on training doctrine manual tasks and requirements and less on the maneuver doctrinal manual tasks and requirements. As such, discrepancies between the two manuals can cause units to emphasize training doctrine over maneuver doctrine. Unless that is the intent, training doctrine needs to reflect the requirements outlined in the maneuver doctrine.

Many training doctrine tasks and requirements are more comprehensive than their comparable maneuver doctrine

concepts. Therefore, authors may wish to change the maneuver discussion to match the MTP requirements and tasks.

Training doctrine's failure to establish OPFOR defensive conditions that include prepared defense, defense of a strongpoint and defense of an urban area must be corrected. Units must train against these harder scenarios. Without this level of training, the necessary offensive TTPs will never be developed.

Finally, training doctrine includes many of the same problems as maneuver doctrine. Therefore, this study recommends the development of a similar short and long term correction plan.

#### UNIT SOP RECOMMENDATION:

- \* USE SOPs AS A SHORT TERM FIX FOR DOCTRINAL SHORTFALLS.

- \* USE THIS STUDY'S CRITERIA TO ASSIST IN THE DEVELOPMENT OF UNIT SOPs.

SOPs appear to be improving, but they still do not adequately reinforce or augment doctrine. SOPs can become the short-term fix for doctrinal shortfalls. TTP's developed in this study can also assist in this process.

### UNIT TRAINING RECOMMENDATIONS:

- \* COMMANDERS NEED TO EMPHASIZE DIRECT FIRE OPERATIONS DURING THEIR TRAINING.

- \* USE UNIT TRAINING DEVELOPED TTPS TO ASSIST IN THE DEVELOPMENT OF DOCTRINAL TTPS.

- \* UNITS SHOULD SEND IDEAS TO MILITARY SCHOOLS AND THE CENTER FOR ARMY LESSONS LEARNED.

This thesis highlighted that there are unit training as well as doctrinal shortfalls. The major problem is the lack of TTP and the lack of emphasis on direct fire operations. This thesis recommends that commanders change their training emphasis to include offensive direct fire operations. This emphasis change can play an important role in the development of the needed TTPs.

A problem with unit-developed TTP involves the dissemination of the TTPs to other units. Therefore, this thesis recommends that units distribute their expertise to the rest of the Army by first submitting their ideas to the doctrine writers. Many great ideas in the field never get back to the schoolhouse. Next, units should emphasize professional writing for submission into branch and other professional publications.

Finally, units should include the Center for Army Lessons Learned (CALL) on their "good idea" distribution list. CALL can distribute these ideas to the rest of the Army. Better TTP exist, but the units need to develop a process to share them.

## RECOMMENDATIONS FOR FUTURE RESEARCH

Remaining Criteria: This study could only review a portion of the established direct fire criteria. The remaining criteria should be reviewed to determine their validity and importance to the employment of direct fire systems. In particular, emphasis should be placed on reviewing the intelligence criteria and its role in direct fire operations. The intelligence process drives offensive direct fire planning and preparation.

Small Arms Employment: This thesis focused on anti-tank systems due to the availability of direct fire data for these systems. Although the general discussion considered the employment of task force small arms, a study is required to accurately measure the role of small arms during offensive operations. This proposed study should not only focus on the data but also on the development of TTP that discuss the integration of small arms and anti-tank fires. For example, TTP could discuss the role an M60 machinegunner can play in suppressing an enemy armored vehicle while a Dragon gunner engages the vehicle from the flank.

NTC does not replicate the dismounted battle effectively. This should not limit this proposed study or unit training.



Unit Home Station Training Practices: This thesis did not specifically review home station training practices. However, it appears the cause of many direct fire preparation problems may be due to training and not doctrinal shortfalls. Therefore, evaluation of home station training with specific emphasis on offensive direct fire operations may be necessary.

JRTC and CMTTC: Most of the direct fire studies involve data from the NTC. During the research phase, this study did not find any direct fire studies that originated with the other CTCs. However, review of O/C comments from these other CTCs suggests a similar problem in direct fire operations.

Specifically, direct fire data taken from take-home packages from the JRTC indicates a substantially greater direct fire problem than that at the NTC. A more in-depth review of these other CTCs should be done to determine the seriousness of the direct fire problems involving our light units and the heavy forces in Europe.

Contribution of Other than Direct Fire Systems: Figures 1-1 through 1-3, Chapter One, demonstrated that direct fire systems contributed to the majority of the kills; the other systems were insignificant in terms of

killing vehicles. Another study needs to look at two aspects:

First, should these other systems be killing more? If so, why aren't they? For example, the Air Force should want to know why it contributes so little to the kill percentages.

Second, how significant are these other systems in other than killing roles? For example, does effective artillery suppression enhance the direct fire kill percentages? Why or why not?

This proposed study's conclusions should also include TTP to enhance the overall effectiveness of all the systems.

**Live Fire Versus Simulation Training:** The Army is moving away from live fire training (presumably because of costs) and moving towards simulation exercise training type exercises (MILES, SIMNET). This may be an unwise decision.

In Figure 1-1 of Chapter One, the overall direct fire effectiveness percentage is low, but the trend or level of performance has remained the same. In Figure 1-2, there is a clear downward trend in direct fire performance. In discussions with task force commanders (previous and current), it appears that beginning in 1987 budget cuts limited live fire range time, so more emphasis was given to MILES gunnery.

This budget cut may not be the problem, but there clearly is a problem between live fire training and engagement simulation training. As discussed in the fratricide criteria discussion, training practices vary between those conducted at live fire and those conducted during the ESX. A study is needed to identify this problem, as well as to make sure that the new cost-cutting training devices don't translate into life-cutting measures when we go to combat and use real bullets. The training systems are good, but they cannot replace live fire training.

Panama and Grenada: Data from the NTC has inherent shortfalls. The most serious shortfall is that NTC does not fully replicate actual combat. The operations in Panama and Grenada provide a proving ground for some of the analysis conducted in this thesis. Review of some of the literature on the Grenada operation does not include observations on direct fire planning, preparation, and execution. After-action studies on the operations conducted in Panama are ongoing. Although the results remain classified, it appears the analysis process does not include a full analysis of direct fire operations. CALL or another agency should conduct an additional study to review these operations with specific emphasis on direct fire operations for both armor and infantry forces.

## CHAPTER FIVE

### ENDNOTES

1. Colonel John N. Greely. Battle Studies, published as a part of Roots of Strategy Book Two (Harrisburg, Pennsylvania: Stackpole Books, 1987) p. 131

2. This data was taken from chapter one of this thesis reference pages 2-4.

3. Although execution and intelligence criteria were not analyzed as part of this thesis, the NTC study comments concerning these areas were extracted and included in Appendix B-1 and C.

4. Specific manual shortfalls and discrepancies are discussed in Chapter Two and Four of this thesis.

5. Like a BP defense, actions on the objective can be planned in detail. For example, in the defense, a commander positions his units using BP's; in the offense he uses overwatch, attack-by-fire, support-by-fire etc. The assault force could parallel the counter-attack force in terms of avenue of approach, or attack axis, control of friendly supporting fires etc. Establishment of direct fire control measures using TRPs and engagement areas, can equate to TRPs, and objectives.

6. Like a defense in sector, a movement to contact, covers a larger area, has more AoAs, and needs control measures throughout the sector to provide flexibility. In both cases, the enemy can appear in many different locations therefore planning must include several contingencies.

7. Doctrinal terms are those defined in FM 101-5-1. FM 71-2, ARTEP-71-2-MTP use and define terms not in FM 101-5-1. For purposes of this study these are non-doctrinal terms. (eg. non-doctrinal terms are those terms not defined in FM 101-5-1).

8. This defensive problem is best demonstrated by the downward trend chart in Chapter One, page 4. Additional study comments in Appendix C

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## **APPENDIX A**

### **Direct Fire Criteria**

Appendix A-1

OFFENSIVE DIRECT FIRE CRITERIA

DIRECT FIRE PLANNING

INTELLIGENCE PROCESS:

- THREAT TEMPLATING
  - IDENTIFY DIRECT FIRE TARGETS
  - IDENTIFY ENEMY DIRECT FIRE ENGAGEMENT AREAS/RANGES
- DECISION SUPPORT TEMPLATE (DST):
  - IDENTIFY DIRECT FIRE DECISION POINTS
  - IDENTIFY DIRECT FIRE SYSTEMS MOVEMENT DECISION POINTS
- TERRAIN/WEATHER ANALYSIS:
  - IDENTIFIES WEAPONS SYSTEMS POSITIONING
  - IDENTIFIES TYPE/QUANTITY OF CONTROL MEASURES
- R & S PLAN:
  - CONFIRMS/REFINES TEMPLATE AND THE DIRECT FIRE PLAN
  - IDENTIFIES TARGETS

COMMANDERS GUIDANCE:

- INTENT (TYPE FIRES + PURPOSE)
- IDENTIFIES DIRECT FIRE R&S PRIORITY (PIR/IR)
- IDENTIFIES ENGAGEMENT PRIORITY
- IDENTIFIES WEAPON'S POSITION/INTEGRATION
- IDENTIFIES TECHNIQUES OF FIRES
- IDENTIFIES FIRE PATTERNS
- DESIGNATES DIRECT FIRE REHEARSAL TYPE/TIMES
- DESIGNATES WEAPONS MAINTENANCE PRIORITY
- DESIGNATES CRITICAL CONTROL MEASURES

CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC):

- ESTABLISHED FOR ACTIONS ON THE OBJECTIVE
- ESTABLISHED FOR MOVEMENT PHASE
- ESTABLISHED IN ADEQUATE QUANTITY
- EASILY IDENTIFIABLE
- FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION
- ESTABLISHED TO PREVENT FRATRICIDE
- ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL

DIRECT FIRE PREPARATION

- DIRECT FIRE PLAN/CONTROL MEASURES:
  - DISSEMINATED
  - UNDERSTOOD
- COMPANY/PLATOON/SECTION/SQUAD FIRE PLANS PREPARED
- INDIVIDUAL WEAPON'S RANGE/SKETCH CARDS PREPARED
- PREPARATION FOR COMBAT CHECKS

DIRECT FIRE PREPARATION(Continued)

- PREPARATION FOR FIRE CHECKS
- DIRECT FIRE REHEARSALS CONDUCTED
- SUPERVISION
- CONDUCTS WEAPONS SYSTEM MAINTENANCE

Appendix A-1

DIRECT FIRE EXECUTION:

R & S:

- IDENTIFIES TARGETS
- ASSISTS IN DIRECT FIRE COMMAND AND CONTROL
- IDENTIFIES CHANGES IN PLAN/CONTROL MEASURES

ACHIEVE VOLUME OF FIRE:

- PROPER MOVEMENT FORMATION
  - WEAPONS ORIENTED ON ENROUTE CONTROL MEASURES
- DIRECT FIRE SYSTEMS PROPERLY POSITIONED TO SUPPORT ACTIONS ON

THE OBJECTIVE.

- COMMAND AND CONTROL SYSTEM CAN:
  - START/STOP DIRECT FIRES
  - MANEUVERS DIRECT FIRES (USING DIRECT FIRE CONTROL MEASURES)
  - REPOSITION DIRECT FIRE SYSTEMS
- INDIVIDUAL/CREW PROFICIENCY

ACHIEVE ACCURACY:

- INDIVIDUAL/CREW PROFICIENCY

PREVENT FRATRICIDE

DIRECT FIRE SYSTEMS INTEGRATED INTO AIR DEFENSE OPERATIONS

ACHIEVE TIMELINESS OF DIRECT FIRES

ADDITIONAL CRITERIA

TECHNICAL ASPECTS

- SYSTEMS CAPABILITIES
- LETHALITY OF MUNITIONS

MANAGEMENT OF RESOURCES

PROTECTION EFFECT (SYSTEM SURVIVABILITY)

LEADERSHIP QUALITIES

Appendix A-2

OFFENSIVE DIRECT FIRE CRITERIA  
(ADJUSTED LIST FOR STUDY)

1. DIRECT FIRE PLANNING
2. COMMANDERS GUIDANCE:
3. - INTENT (TYPE FIRES + PURPOSE)
4. - IDENTIFIES DIRECT FIRE R&S PRIORITY (PIR/IR)
5. - IDENTIFIES ENGAGEMENT PRIORITY
6. - IDENTIFIES WEAPON'S POSITION/INTEGRATION
7. - IDENTIFIES TECHNIQUES OF FIRES
8. - IDENTIFIES FIRE PATTERNS
9. - DESIGNATES DIRECT FIRE REHEARSAL TYPE/TIMES
10. - DESIGNATES WEAPONS MAINTENANCE PRIORITY
11. - DESIGNATES CRITICAL CONTROL MEASURES
12. CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC):
13. - ESTABLISHED FOR ACTIONS ON THE OBJECTIVE
14. - ESTABLISHED FOR MOVEMENT PHASE
15. - ESTABLISHED IN ADEQUATE QUANTITY
16. - EASILY IDENTIFIABLE
17. - FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION
18. - DESIGNATED TO PREVENT FRATRICIDE
19. - ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL
20. DIRECT FIRE PREPARATION
21. - DIRECT FIRE PLAN/CONTROL MEASURES:
22. - DISSEMINATED
23. - UNDERSTOOD
24. - COMPANY/PLATOON/SECTION/SQUAD FIRE PLANS PREPARED
25. - INDIVIDUAL WEAPON'S RANGE/SKETCH CARDS PREPARED
26. - PREPARATION FOR COMBAT CHECKS
27. - PREPARATION FOR FIRE CHECKS
28. - DIRECT FIRE REHEARSALS CONDUCTED
29. - SUPERVISION

## Appendix A-3

### OFFENSIVE DIRECT FIRE CRITERIA (EXPANDED DISCUSSION/DEFINITION OF ADJUSTED LIST CRITERIA)

1. DIRECT FIRE PLANNING: To be effective direct fires like indirect fires requires separate planning considerations. For purposes of this study a direct fire plan is a detailed scheme, method use to distribute and control the direct fire of all available systems to achieve the desired effect. Direct fire plans can be written, depicted using graphics, or expressed orally as time and resources permit.

2. COMMANDERS GUIDANCE (Planning Guidance): "will vary with the mission, time available, situation, information available, and the experience of the commander and his staff...this guidance is used to direct or to guide the attention of the staff in the preparation or revision of staff estimates and to expedite the decisionmaking process...[and] provides a common start point for staff planning." (FM 101-5, p5-9) For purposes of this study I will be examining the commanders planning guidance as it relates to offensive direct fire planning. The following criteria will also be examined as a component of commanders guidance:

a. INTENT: Direct fire intent will be defined as a purpose or desired results for the use of direct fire system(s). In addition, there are normally three types of direct fire effects (listed below). Therefore, a commander can designate direct fire intent by using the terms listed below:

1). Destruction Fires: Fires delivered for the sole purpose of destroying targets. Destruction means the target is out of action for a prolonged period of time if not indefinitely.

2). Neutralization/Fixing Fires: Fires delivered to prevent, hamper and/or interrupt movement and/or the firing of weapons.

3). Suppressive Fires: Fires brought to bear on a target to prevent effective fire and observation of friendly forces.

b. DIRECT FIRE R&S PRIORITY (PIR/IR): Direct fire PIR/IR's are PIR/IR's that specifically relate to the direct fire plan. For example, a PIR to identify a specific enemy location (tank plt position) that has a planned direct fire control measure. (TRP/EA)

c. ENGAGEMENT PRIORITY(Type Target, Type System): Engagement priorities consist of two elements. The first element is type target. A commander needs to designate or prioritize the type of target that he wants destroyed, neutralized or suppressed. The second element is type system. Besides designating the type target a commander should designate the type firing system(s) that will engage the designated target. For example, a task force commander could establish the engagement priority for tank and AT to destroy enemy tanks, air defense systems, and enemy APC's in that order. He then could designate a destruction of enemy APC's for BFV systems and suppression of enemy tanks, and ADA systems in that order. Engagement priorities could be established ahead of time in unit SOP's. However, standardized engagement priorities should be reevaluated each mission to ensure they meet the METT-T situation and the commander intent for his direct fire systems.

d. WEAPON'S POSITION/INTEGRATION: Weapon's position/integration is the location designated for a specific type or types of weapons. When designating a position a commander must also assign the desired effects (direct fire intent) based on the weapons capabilities and limitations. For example, a commander may designate a support-by-fire position to a tank team to achieve neutralization of a portion of the objective in support of the assaulting elements.

e. TECHNIQUES OF FIRES: There are three fire techniques (listed below). These techniques are normally apply at the platoon level, however, they may also occur at the Co/Tm and Bn/TF level.

1). Simultaneous Fires: All weapon systems engage simultaneously in their assigned sectors, areas etc.

2). Alternating Fires: Weapon systems/units alternate firing and observing in conjunction with each other. At TM and TF this technique can be used to facilitate maneuver between units.

3). Observed Fires: Weapon systems/units fire at designated targets while an observer (FO, Scout, another weapon system) spots and adjusts fires on to the target.

g. FIRE PATTERNS For purposes of this study there are five fire patterns (listed below). These techniques are normally used at the platoon level, however, they may be applied at the Co/Tm and Bn/TF level. In addition fire patterns can vary depending on the level. For example, TF may be conducting unit cross fire, while the TM is conducting frontal fires.

1). Frontal Fires: is used/planned when the targets are/thought to be positioned to the front of the direct fire system(s)/unit.

2). Cross Fires: is used/planned when targets are/thought to be positioned laterally and obstructions prevents frontal fires. Units may plan for cross fire to enhance survivability by using obstructions to protect flanks. (Similar to Depuy fighting positions) Left side weapon systems/units will engage targets to the right side. Right side weapon systems/units will engage targets to the left side.

3). Depth Fires: is used/planned when targets are/thought to be positioned in column or depth. Normally Left flank weapon system(s)/units engage the rear most target(s), and right flank weapon system(s)/units engage the front most target(s).

4). Point Fires: is used/planned when a specific target is identified for attack by direct fire weapon systems. All weapons/units are fired at the target.

5). Area Fires: is used/planned when targets are distributed, numerous, or less obvious. Fire control measures are used to ensure the entire target area is covered by fire and observation.

h. TYPE FIRES: This study identified fourteen different types of fire that a commander can plan for or designate (listed below). These fire types were obtained from current doctrinal references. Not all the terms have a doctrinal definition and some of the definitions have been modified to apply to direct fire systems. Designation of type fires is not necessary but it may assist the commander in communicat-



ing his intent. (Note: many of these definitions are similar and therefore can cause confusion instead of clarifying the commanders intent. When specifying type fires, commanders should ensure that all his personnel have the same definition of the term.)

1). Assault Fire: "Fires delivered by the attacking troops as they close with the enemy." (JCS Pub 1, p.)

2). Counterfire: Fires intended to destroy, neutralize suppress firing enemy weapon systems.

3). Covering Fires: "Fire used to protect friendly troops from enemy direct fires." (FM 101-5-1)

4). Final Protective Fire (FPF): An immediately available preplanned barrier of direct and indirect fire designed to provide close protection to friendly positions and installations by impeding enemy movement.

5). Harassing Fire: "Fire designed to disturb the rest of the enemy troops, to curtail movement and, by threat of losses, to lower morale." (JCS Pub 1)

6). Interdiction Fire: "fire placed on an area or point to prevent the enemy from using the area or point." (FM 101-5-1)

7). Supporting Fires: "Those forces charged with providing intense direct overwatching fires to the assault and breaching forces." (FM 101-5-1)

8). Continuous Fires: Fire conducted at a normal rate without interruption for application of adjustment corrections or for other causes...Firing will continue until terminated by the commander of the mission or temporary suspended by a cease fire command.

10). Enfilade (Flanking) Fires: Fire originating from the flank of the target area. (Janes, p.63)

11). Marking Fires: "Fires placed on a target for the purpose of identification." (JCS Pub 1)

12). Obscuration Fire: Fires that isolate the target and obscure it's view of the battlefield.

13). Scheduled Fires: Prearranged fire executed at a predetermined time.

14). Screening Fires: "Involves the use of smoke and WP ... to mask friendly maneuvering element in order to disguise the nature of their operations." (FM 71-2, p. 6-14)

i. DIRECT FIRE REHEARSAL TYPE: are rehearsals specifically designed to enhance understanding of the direct fire plan and operation. It is imperative that commanders designate type, participants, time and place of the rehearsal. The type of rehearsal will depend on time and resources available. In general rehearsals should be conducted over similar terrain, during the same timeframe (eg at night) and under the same conditions (MOPP IV) that the actual operation will be conducted. Offensive direct fire rehearsals should include critical control measures, enemy target locations, intent, type fires, fire patterns, techniques of fire, and designation of participants from individual gunner, crew and leaders. For purposes of this study there are eight types of rehearsals: (Note: the following information was extracted from an information paper written by Maj Bogden, CALL, Leavenworth.)

1). Full-Up (Full-Scale): This type rehearsal consists of all maneuver and supporting elements that will actually be involved in the direct fire battle. For offensive operations full-up rehearsals should attempt to use similar terrain, if available. A full-up rehearsal is resource intensive, particularly in time. Normally adequate time is not available at the task force level but should be available at platoon and below levels. The full-up rehearsal follows the CRAWL-WALK-RUN methodology. More than one rehearsal should be conducted if possible with a "dress" rehearsal reflecting all the battlefield conditions that may be encountered.

2). Partial: This type rehearsal is a limited full-up rehearsal, because, the participants, time, number, location may vary. Commanders may want to establish different levels of rehearsals within their SOP's to correspond to their orders group, for example. For direct fire rehearsals, you may want just leaders, or just crews/gunners, or both.

3). Sandtable/Terrain Model Exercise: This type of rehearsal can vary in who participates. It is particularly effective because it is not as time intensive. Some units have designated personnel that prepare sandtables or build

terrain models near the TOC to speed up rehearsal times. Critical direct fire control measures should be designated on the sandtable or terrain model.

4). Walk-thru: This is similar to the sandtable/terrain model technique. It requires designated participants to walk-thru their direct fire actions. This technique is particularly effective for offensive operations to review actions on the objective and actions during movement. This technique can be done in conjunction with the sandtable/terrain model technique.

5). Map: This is the same as the sandtable/terrain Model technique, but uses a map instead of the ground. Normally it is limited to leaders. It is also one of the least desired rehearsal techniques, but is better than no rehearsal than none at all. At least a review of critical control measures can be conducted to ensure that they are portrayed on the map correctly.

6). Fire Plan/Direct Fire Matrix: This type of rehearsal can be conducted in conjunction with the other type rehearsal or by itself. For this type of rehearsal the participants use their fire plans and/or a direct fire matrix to fight the direct fire operation. This type of rehearsals helps in identifying control measure problems. (eg. quantity, type, correctness, understanding)

7). Signal/Communications: This can be used in conjunction with other types of rehearsals or by itself. The intent is to test communication and signal systems by using them to rehearse the direct fire operation. Critical visual and audio direct fire control measures should be used during this rehearsal. (eg. green star, lift fires from TRP1 to TRP2 to neutralize enemy targets to the left of the assault area)

8). Briefback/Backbrief: THE PRIMARY PURPOSE OF THESE IS NOT AS A REHEARSAL. They constitute a way for a subordinate to communicate to a commander what he thinks he heard in an order (briefback) and how he plans on executing his portion of the order (backbrief). A side benefit is these may also serve as a mental rehearsal for the person conducting the brief. Conduct of either of these type briefs are inadequate in terms of conducting a rehearsal. To conduct adequate rehearsals requires the unit to use one of the above techniques.

j. WEAPONS MAINTENANCE PRIORITY: Based on the his intent on which system will play the major role in the operation, a commander should establish a maintenance priority for his key weapons systems. (eg. Tanks, Tows, etc.) For example, if the unit is conducting an infiltration mission to neutralize by direct fire C3 elements, the commander may prioritize small arms maintenance over that of his anti-armor systems.

k. CRITICAL CONTROL MEASURES: Based on his direct fire intent a commander should ensure that he highlights those control measures (visual, voice, graphic) that he considers critical to the success of his direct fire operation. Further discussion of control measures follows in the next paragraph.

3. CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC): Control measures are the only means available for a team leader up to task force commander to control and distribute his fires to obtain the desired results. Without some form of control measures the battlefield consists of individual direct fire actions. Control measures can be either audio, visual, or graphic. Examples these are: (Not all inclusive) (Battlefield conditions, such as, MOPP levels, EW, smoke, etc., may degrade many of these control measures, therefore alternates should be made available)

a. Audio Control Measures:

1). Voice (includes codewords, fire commands, etc.)  
Some fire commands include:

- a). Cease Fire
  - b). Hold Fire
  - c). Weapons Free, Hold, Tight
  - d). Clear
  - e). Fire
  - f). Stop Fire
- 2). Horns
  - 3). Whistles
  - 4). Other noise making means

b. Visual:

- 1). Pyro, Signal flares, lights etc.
- 2). Ammunitions: tracer, smoke, WP, illum, colored marking rounds (M203), etc. (Marking fires)
- 3). Terrain features.
- 4). Identified enemy positions, vehicles, etc.

c. Graphic: (Offense) Normally annotated on a fire plan and consists of the following control measures: (These terms are used in doctrinal manuals but may not be defined)

- 1). Target Reference Points (TRP)
- 2). Engagement Area (EA)
- 3). Phase Lines (PL)
- 4). Attack by Fire Position
- 5). Base of Fire Position
- 6). Boundary
- 7). Final Protective Fire (FPF)
- 8). Free Fire Area
- 9). Limit of Advance
- 10). No Fire Area (NFA)
- 11). Overwatch Position
- 12). Primary Direction of Fire (PDF)
- 13). Restrictive Fire Area
- 14). Restrictive Fire Line
- 15). Sector of Fire
- 16). Limit of Fire
- 17). Support by Fire Position
- 18). Trigger Line/Point
- 19). Weapon-Target Line

d. ESTABLISHED FOR ACTIONS ON THE OBJECTIVE: It is imperative that a commander establishes some form of control measure for actions on the objective. Fire control measures can be TRP's, EA's, FPF's, RFL's etc. These control measures should be confirmed by the recon effort. Fire plans/range cards can be developed even for offensive operations. For example, the support by fire position unit can develop range cards/ fire plans for assigned sectors to be covered on the objective.

e. ESTABLISHED FOR MOVEMENT PHASE: During movement fire control can be done by designating phase line, TRP's, sectors of fire, and unit movement formations. For example, IPB and R & S operations indicate that enemy positions will be on the left flank of the task force during movement. The R & S plan has identified certain enemy OP's while the IPB indicates the likely positions of enemy CRP and platoon size units. Based on this information the commander can designate on echelon left force to maximize fire power on the most likely enemy positions. He can then establish direct and indirect TRP's on known and suspected enemy positions. He can designate company sectors of fire and observation (using two TRP's and phase lines). [Although this study

focuses on the deliberate attack's use of control measures during the movement phase, this concept can be applied to other type offensive operations, like movement to contract.]

f. ESTABLISHED IN ADEQUATE QUANTITY: Regardless of which control measures are used, they need to be established in adequate quantity to facilitate C2. For critical events, redundancy in control measures should be considered. For example, FPF could be designated by a trigger line, voice and signal flare.

g. EASILY IDENTIFIABLE: Regardless of which control measures are used, they need to be easily identifiable to those weapon systems that they will control. For example, TRP's should be designated on the road junction, house, or any feature that can be identified by both visual and thermal sighting systems.

h. FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION: When designating control measure they should be developed to facilitate fires on identified enemy locations. For example, if recon elements identify an enemy position, hasty fire control measures, like tracer rounds, should be established to facilitate destruction fires.

i. ESTABLISHED TO PREVENT FRATRICIDE: Control Measures also serve the purpose of protecting friendly troops from friendly fires. NTC has highlighted a high incident of fratricides. Therefore commanders should consider direct fire control measures that may have the specific or dual purpose of preventing fratricide. Air defense use of weapons tight, hold, free fire control status's is a good example of control measures designed to prevent fratricide. NFA is another. Commanders can use similar type control measures to control direct fire systems. In addition, specific signals can be assigned to stop, start and shift fires. The number of techniques are only limited by the commanders imagination, but it is important that he insure that he considers the fratricide aspects.

j. ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL: Direct fire systems play an important role in the conduct of air defense. At the NTC tank sabot (miles), dragon (miles) have been responsible for numerous helicopter kills. More important, extensive ground fire forces aircraft up off the surface so they can be better engaged by dedicated air defense systems. Therefore, commanders must plan for the use of direct fire systems for their air defense role. As

part of this planning process direct fire and air defense control measures should be used to compliment each others fires. For example, direct and indirect fire TRP's could be assigned along the air defensive primary engagement line which is positioned on a likely enemy air avenue of approach, thus massing direct, indirect and air defense fires. IPB could identify likely enemy attack helicopter ambush or attack positions that could also have a control measure assigned to orient fires and observations.

4. DIRECT FIRE PREPARATION: The best direct fire plan will be useless if proper preparation for the conduct of the plan is not conducted. Critical components of direct fire preparation include:

a. DIRECT FIRE PLAN/CONTROL MEASURES:

1). DISSEMINATED: Without the proper dissemination

2). UNDERSTOOD: Under battlefield conditions, many of the control measures can easily be confused. Therefore it is imperative that all participants understand the full meaning of each control measure. When using graphic control measures commanders should ensure that the same definition/intent of the control measure is understood by the participants.

a. DIRECT FIRE PLAN/CONTROL MEASURES ARE DISSEMINATED AND UNDERSTOOD: As was highlighted earlier if the direct fire plans and control measures are not disseminated or properly understood than the plan will not occur.

b. COMPANY/PLATOON/SECTION/SQUAD FIRE PLANS PREPARED: As with any TF plan subordinate units must develop a plan to achieve their mission and commanders intent. Proper supervision during the preparation phase will ensure that these plans are properly prepared and include all the control measures designated by the higher unit. Failure to include critical control measures means a loss of direct fire control. As was discussed earlier, direct fire plans should be developed for offensive operations. Using the same format as the fire plan for defensive operations commanders can position control measures, identify likely enemy positions, or actual positions. This fire plan can then serve as a basis for rehearsals.

c. INDIVIDUAL WEAPON'S RANGE/SKETCH CARDS PREPARED: Same as the fire plans.

d. PREPARATION FOR COMBAT CHECKS/INSPECTIONS: Before any operation units should conduct checks/inspections to ensure the proper equipment and supplies are taken, and they are in serviceable condition. For example, ammunition loads should be prepared based on the likely use of the direct fire system. If a tank platoon has a support by fire mission it will probably have a majority of service sabot. Where the tank platoon that will move with the assault element will probably want to have a higher HEAT load. Serviceability of ammunition and equipment is also important to the conduct of direct fire operations. Vietnam highlights many examples where the weapon was clean and serviceable but the magazine was rusted so the rounds didn't feed. Again a good plan is no good unless the systems are prepared to execute it. Although many of the checks remain the same it is important that leaders insure they tailor their preparation to the mission and intent.

e. PREPARATION FOR FIRE CHECKS: As with the preparation for combat checks, prep for fire checks make sure the system is prepared to function as it is designed. For example, failure to conduct an MGS update, or Boresight automatically reduces the weapon systems effectiveness. Failure to zero night vision devices for infantry systems is another example of prep for fire checks.

f. DIRECT FIRE REHEARSALS CONDUCTED: Rehearsals make sure the mission, intent and plan is understood. If you don't rehearse it normally doesn't happen. (reference rehearsal discussion above)

g. SUPERVISION: This is the most critical element during the preparation phase. Without adequate supervision normally none of the above criteria a properly conducted or achieved. It is imperative that commanders establish some system to ensure all phases of preparation are supervised. NTC has shown that normally commanders and staff will kill themselves developing and producing a plan and then sleep/rest during the preparation phase. As a consequence the above listed preparation steps either don't occur or they are not to standard. The result is the task force begins the battle in a degraded mode before ever meeting the enemy. (Note: A conops study highlighted that on the average the CSM got the most sleep of anyone in the task force. He may be one of those key individuals that can assist in the supervision process. Staff offices can also assist at the unit level.)



## **APPENDIX B**

**Direct Fire Data**

**Collection Instruments**

## Appendix B-1-A: Study's Analysis and Rating Summary

### OFFENSIVE DIRECT FIRE CRITERIA (ADJUSTED LIST FOR STUDY)

Criteria 1: DIRECT FIRE PLANNING (general comments)

1 & 4

Overall Rating: 1 - Problems

#### Summarized Study Comments:

1. "...lack of focus on providing specific guidance from task force, through company to platoon level on the plan for employment of direct fire in the operation." (1-  
2  
p.25)
2. "planning...direct fire considerations are not fully considered...in planning for offensive operations." (1-p.26)
3. Task Forces developed direct fire plans during 86.6% of the defensive missions and only 12.1% of the offensive missions. (off & def data) (2-p.11)
4. 43.5% of Armor TF's and 29.6% of the Mech TF's developed direct fire plans. (off & def data) (2-p.11)
5. Task force not trained in direct fire planning:
  - a. Troop leading procedures
  - b. Detailed IPB at all levels
  - c. Massing fires
  - d. Direct fire plan did not support the scheme of maneuver (offensive and defensive operations) (8-p.2)
6. Fratricide avoidance not considered in direct fire plan. (offensive and defensive operations) (8-p.3)
7. Formal fire planning was particularly weak. (offensive and defensive operations) (7-p.1)
8. Offensive fire planning was done even less than defensive fire planning at both company/team and platoon levels. (offensive and defensive operations) (7-p.2)
9. Commander and staff planning for direct fire is poor. (offensive and defensive operations) (6-p.6)
10. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 2: COMMANDERS GUIDANCE:**

1

**Overall Rating: 1 - Problems**

**Summarized Study Comments:**

1. Platoon orders often not given or incomplete. (lack of planning time and/or poor company guidance) (offense and defense data) (4-p.9)
2. Commander and staff planning for direct fire is poor. (offensive and defensive operations) (6-p.6)
3. Some NCO's had [valid] complaints involving the lack of guidance and the task force planning group taking too much time to issue the TF operations. (offense and defense operations) (9A-p.4)
4. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 3: INTENT (TYPE FIRES + PURPOSE)**

1

**Overall Rating: 1 - Problems**

**Summarized Study Comments:**

1. Commanders intent for direct fire expressed clearly? TF 12.5%, CO 37.0%, Platoon 42.5%. (offense)(p. 1-52)
2. Commanders intent consistent with higher commanders intent? TF 37.5%, CO 63.0%, plt 46.0%. (1-p.46)
3. Plan supports commanders intent? TF 62.5%, CO 48.1%, Plt 35.6%. (offense) (1-p.52)
4. In most cases, the company commander's intent or the battalion commander's intent was not discussed or briefed in the OPORD. When the commander's intent did reach the platoons it was at the most times very vague. (offense and defense operations) (9A-p.6)
5. "... a better understanding of the commander's intent and plan might avoid some of the [fratricide] errors." (10-p.13)
6. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 4: IDENTIFIES DIRECT FIRE R&S PRIORITY (PIR/IR)**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 5: IDENTIFIES ENGAGEMENT PRIORITY**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. TF's and Co/Tm's established engagement/target priorities only 12.2% of the time. (off & def data) (2-p.9)

2. During execution target engagement priorities were executed per TF guidance 3.4% of the time. (off & def data) (2-p.10)

3. Specific engagement criteria provided 42% of occasions. (offense and defense data) (4-p.7)

4. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 6: IDENTIFIES WEAPON'S POSITION/INTEGRATION**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. Cdr intended that overwatch/support by fire element engage outside OPFOR max range? TF 50.0%, CO 55.6%, Plt 39.1%. (offense) (1-p.52)

2. Cdr intended to mass fires? TF 50.0%, CO 48.1%, Plt 39.1%. (offense) (1-p.52)

3. Tank crews are frequently frustrated by malpositioning by their leaders. (offense and defense data) (4-p.9)

4. Difficulty in positioning platoons to engage from different points/angles. (offensive and defensive operations) (7-p.2)

5. Large scale reliance on column formations hindered the ability of platoons to return and mass fires. (offensive and defensive operations) (7-p.2)

6. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 7: IDENTIFIES TECHNIQUES OF FIRES**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 8: IDENTIFIES FIRE PATTERNS**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. TF and co/tm never planned to use volley fires to rapidly destroy OPFOR units. (offensive and defensive operations) (7-p.3)

2. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 9: DESIGNATES DIRECT FIRE REHEARSAL TYPE/TIMES**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 10: DESIGNATES WEAPONS MAINTENANCE PRIORITY**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 11: DESIGNATES CRITICAL CONTROL MEASURES**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 12: CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC):**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. [There is a] relative lack of use of established control measures for their expressly designed purpose. (1-p.53)

2. Control measures established: TF CO PLT  
(offense) (1-p.53)

a. overwatch positions	62.5	44.4	49.4
b. base of fire positions	37.5	25.9	24.1
c. TRP's	37.5	33.3	18.4
d. company objectives		36.1	

3. At TF level only 34.3% of the time do the direct fire control measures supt other staff plans. (2-p.7)

4. During execution the TF's use of control measures rated moderately effective or better only 21.9% of the time. (off & def data) (2-p.10)

5. During execution the TF cdr's use of direct fire control measures to control maneuver fires rated moderately effective or better only 14.8% of the time. (off & def data) (2-p.10)

6. (Execution phase) Platoons were observed actually controlling and distributing direct fires (use of control measures or fire commands) 43% of occasions. (offense and defense data) (4-p.7)

7. (Execution phase) Co/Plt fire commands were seldom used and subsequent fire commands were never used. (offensive and defensive operations) (7-p.2)

8. (Execution phase) Co/plts failed to mass the fires of both their primary weapons and their machineguns.

9. (Execution phase) All companies experienced fratricide with other TF units. One company experienced internal fratricide. Insufficient coordination and limited visibility were the most frequent contributing factors. (offensive and defensive operations) (7-p.4)

10. Because some of the fratricidal events seem to occur when there is little likelihood of OPFOR being in the area, one could consider the institution of fire control procedures for all weapons during some phases of a battle, much akin to those used for air defense ("Weapons Tight," etc.). (10-p.13)

11. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 13: ESTABLISHED FOR ACTIONS ON THE OBJECTIVE**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. Consolidation/reorganization on the objective plan not integrated with direct fire plan. (offensive and defensive operations) (8-p.2)

2. Actions on the objective collective training problems. (offensive and defensive operations) (8-p.2)

3. Multiple TRP's or checkpoints and SBF positions were not designated throughout the depth of objectives to rapidly shift and mass fires. (offensive and defensive operations) (7-p.2)

4. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 14: ESTABLISHED FOR MOVEMENT PHASE**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. Actions on contact collective training problems. (offensive and defensive operations) (8-p.2)

2. Multiple TRP's or checkpoints and SBF positions were not designated throughout the depth of objectives to rapidly shift and mass fires. (offensive and defensive operations) (7-p.2)

3. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 15: ESTABLISHED IN ADEQUATE QUANTITY**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. Cdr's did not integrate adequate control measures 77.3% of the time. (off & def data) (2-p.7)
2. Only one co/tm consistently added both support-by-fire positions (SBF) and TRP's to its graphics. (offensive and defensive operations) (7-p.2)
3. Multiple TRP's or checkpoints and SBF positions were not designated throughout the depth of objectives to rapidly shift and mass fires. (offensive and defensive operations) (7-p.2)
4. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 16: EASILY IDENTIFIABLE**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. TRP's were almost never sited on recognizable terrain features.
2. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 17: FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.



**Criteria 18: DESIGNATED TO PREVENT FRATRICIDE**

1

**Overall Rating: 1 - Problems**

**Summarized Study Comments:**

1. "Of the friendly (Blue Force) vehicles killed in battle, at least 1 percent are killed by friendly (direct) fire." (10-p.vii)
2. "Most direct fire fratricides are isolated instances." (10-p.vii)
3. "Multiple kills ... were found in four out of twelve battles." (10-p.vii)
4. "one-half of the direct fire fratricides could have been prevented had the shooting vehicle been aware of the location of a sister organizational unit, for the destroyed vehicle was located in a friendly formation with no enemy nearby. Another third of the cases could have been prevented if the shooter had knowledge of the location of individual isolated friendly vehicles,,,,One-sixth of the cases involved the killing of a friendly vehicle while close to opposing force (OPFOR) elements. (10-p.vi)
5. "...fratricide is more frequent in night attacks. (10-p.13)
6. "... a better understanding of the commander's intent and plan might avoid some of the [fratricide] errors." (10-p.13)
7. Because some of the fratricidal events seem to occur when there is little likelihood of OPFOR being in the area, one could consider the institution of fire control procedures for all weapons during some phases of a battle, much akin to those used for air defense ("Weapons Tight," etc.). (10-p.13)

**Criteria 19: ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL**

1

**Overall Rating: 1 - Problems**

**Summarized Study Comments:**

1. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 20: DIRECT FIRE PREPARATION**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. "...units seem to be performing the basic preparation tasks. However,...more detailed or time consuming the preparation task, the less likely it is to be performed." (1-p.26)
2. 11H soldiers not fully familiar with AN/TAS-4 night sight. (offense and defense Opns) (3-p.19)
3. 11M soldiers basic gunner [TOW] skills limited.
4. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 21: DIRECT FIRE PLAN/CONTROL MEASURES**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. Direct fire specifically addressed unit plan/covered by SOP? TF 37.5%, CO 63.0%, Plt 35.6% (offense) (1-p.52)
2. Task Forces emplaced/designated control measures 28.1% of the time. (off & def data) (2-p.8)
3. All tanks on company net (over 50% of occasions) preclude platoon fire control in execution, and by implication in planning. (offense and defense data) (4-p.9)
4. Generally inadequate detail in CO/TM graphics. (offensive and defensive operations) (7-p.E1)
5. Formal fire planning was particularly weak. (offensive and defensive operations) (7-p.1)
6. A majority of company commanders did not produce a company fire plan. (offensive and defensive operations) (7-p.1)
7. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 22: DISSEMINATED**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. 35.3% of applicable crews had key TF control measures. (off & def data) (2-p.8)

2. NCO's were weak in keeping their subordinates informed of the mission Overall, the lowest enlisted soldiers did not know the details of the upcoming mission. (offense and defense operations) (9A-p.3)

3. In most cases, the company commander's intent or the battalion commander's intent was not discussed or briefed in the OPORD. When the commander's intent did reach the platoons it was at the most times very vague. (offense and defense operations) (9A-p.6)

4. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 23: UNDERSTOOD**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. In the defense, control measures were easily identifiable at required ranges 42.8% of the time. (2-p.8)

2. In the defense, control measures were distinguishable 48.5% of the time. (2-p.8)

3. In most cases, the company commander's intent or the battalion commander's intent was not discussed or briefed in the OPORD. When the commander's intent did reach the platoons it was at the most times very vague. (offense and defense operations) (9A-p.6)

4. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 24: COMPANY/PLATOON/SECTION/SQUAD FIRE PLANS PREPARED**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. "(def opns) lack of detailed fire plans at platoon and company level in most cases do not support a comprehensive organization for battle." (1-p.26)

2. Platoon orders often not given or incomplete. (lack of planning time and/or poor company guidance) (offense and defense data) (4-p.9)

3. Fire plans and range sketch cards are not well understood or carefully prepared and checked. (offense and defense data) (4-p.10)

4. CO/TF fire control planning not done. (offensive and defensive operations) (8-p.2)

5. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 25: INDIVIDUAL WEAPON'S RANGE/SKETCH CARDS PREPARED**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. Fire plans and range sketch cards are not well understood or carefully prepared and checked. (offense and defense data) (4-p.10)

2. Range cards not to standard. (offensive and defensive operations) (8-p.2)

3. Range cards and sector sketches were not done consistently or to standard...Where range cards were done they were not available in all positions. This resulted in weak and lack of fire control. (offense and defense operations) (9A-p.5)

4. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 26: PREPARATION FOR COMBAT CHECKS**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. Precombat checks: CO 88.9%, Plt 72.4% (offense) (1-p.53)

(Note: Study did not comment on quality of checks)

2. Some NCO's seemed to lack discipline and could not instill discipline or the need for it in their subordinates. In some cases when platoon leaders were absent, maintenance, boresighting, and precombat checks did not receive the same intense emphasis. (offense and defense operations) (9A-p.1)

3. Throughout the task forces, precombat checks, ammo accountability, and weapons function checks were being conducted daily, but not with the constant emphasis required to ensure all areas were checked. The quality of these precombat inspections were at most time questionable. (offense and defense operations) (9A-p.4)

4. NCO weakness: not making sure that individual and crew served weapons were being cleaned. (Firepower/distribution was lost due to dirty, malfunctioning weapons) (offense and defense operations) (9C-p.2)

5. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 27: PREPARATION FOR FIRE CHECKS**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. Boresight/Zero: CO 77.8%, Plt 66.7% (offense) (1-p.53)

(Note: Study did not comment on quality of checks)

2. Individual and crew training proficiency needs improvement in...Boresight and Zero procedures (ITV and BFV). (offense and defense Opns) (3-p.14)

3. During boresighting, across the 12 platoons observed, crews rarely understood what they were doing, why they were doing it, or how to do it.

a. Muzzle Boresight Devices (MBD) brought from homes-tation in many cases were not calibrated, and crews did not know how to determine if calibration was needed nor that calibration was required.

b. Environmental data was almost never requested. Often data was applied by 'swag.' Crews do not use manual override in high, gusty winds for wind sensor.

c. Crews demonstrated a lack of understanding and/or proper use of:

- muzzle reference system (46% of occasions)
- ammunition subdesignations (37% of occasions)
- computer correction factors (37% of occasions)

(offense and defense data) (4-p.4,5)

4. In live fire, of tanks present and checked, 29% had correctly indexed manual inputs and correctly completed prep to fire checks. (offense and defense data, (4-p.6)

5. Some NCO's seemed to lack discipline and could not instill discipline or the need for it in their subordinates. In some cases when platoon leaders were absent, maintenance, boresighting, and precombat checks did not receive the same intense emphasis. (offense and defense operations) (9A-p.1)

6. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

**Criteria 28: DIRECT FIRE REHEARSALS CONDUCTED**

1

Overall Rating: 1 - Problems

**Summarized Study Comments:**

1. "low incidence of rehearsals." (1-p.26)
2. Rehearsals conducted: Co 51.9%, Plt 36.8% (offense) (1-p.53) (Note: Study did not comment on quality of rehearsals or if they were in direct reference to direct fire)
3. TF's rehearsed use of control measures 8.2% of the time. (off & def data) (2-p.7)
4. 28.5% of TF's that developed direct fire plans rehearsed direct fire. (off & def data) (2-p.11) (Note: TF's developed direct fire plans only 12.1% of the time during the offense). (off & def data) (2-p.11)
5. OC's rated 45.5% of the rehearsals conducted as "ineffective". (off & def data) (2-p.12)
6. Backbriefs most widely used rehearsal technique (37.9 of all rehearsals conducted). (off & def data) (2-p.12)
7. During preparation for battles more thorough rehearsals were possible 79.7 of the time. (off & def data) (2-p.12)
8. (Execute phase) 25.8% of the TF's attempted to conduct direct fire as rehearsed. (off & def data) (2-p.13)
9. (Execute phase) The OC's rated rehearsals moderately effective or better in terms of cost to unit's time and assets 26.8% of the time. (2-p.13)
10. Platoon leaders rehearse the direct fire plan only on a sporadic basis in one CO/TM and not at all in the other three. (offensive and defensive operations) (7-p.D1)
11. Some of the company weaknesses would have been corrected if more thorough direct fire rehearsals had been performed. (offensive and defensive operations) (7-p.3)
12. Since the vast majority of platoons did not rehearse the direct fire plan most TC's and squad leaders did not have a clear idea of when to shoot, where to shoot, and what to shoot until the unit got into a fight. This was particularly true in the offense. (offensive and defensive operations) (7-p.3)
13. Rehearsals are generally ineffective. (offensive and defensive operations) (6-p.6)
14. Some crew drills and rehearsals are being performed, but they are often not to standard. (offense and defense operations) (9C-p.1)
15. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

## Criteria 29: SUPERVISION

1

Overall Rating: 1 - Problems

### Summarized Study Comments:

1. Some NCO's seemed to lack discipline and could not instill discipline or the need for it in their subordinates. In some cases when platoon leaders were absent, maintenance, boresighting, and precombat checks did not receive the same intense emphasis. (offense and defense operations) (9A-p.1)

2. Task force NCO's were making spot checks and corrections, but not to the level of detail needed. Occasionally, weapon systems would not fire because they had not been checked. In some instances, NCO's observed something being done wrong, and accepted it rather than making a correction. Junior NCO's were not always as stringent as they should have been. (offense and defense operations) (9A-p.5)

3. Most 1SG's were very involved in the CSS plan, with very little time devoted to assistance in the preparation of the tactical mission. It is also noted that very little time was available to provide tactical and technical guidance to subordinates or to be present at the company OPORD. (offense and defense operations) (9B-p.2) and (9C-p.1,2)

4. In the opinion of the company OC's the junior NCO's are weak in training and supervision of mission oriented tasks. (offense and defense operations) (9B-p.2)

5. NCO's are being observed making spot corrections. In most cases they are not following up to see if the discrepancies are in fact being corrected. (offense and defense operations) (9C-p.1)

6. Reference Appendix B-1-B for Observer Controller Summary Analysis and Ratings.

## MAJOR REPORT CONCLUSIONS

(Not directly related to this studies' criteria)

1. "Units training at the NTC are not achieving as great a proportion of kills of OPFOR armored vehicles as would be required to achieve consistent success in combat operations against an enemy utilizing Soviet style doctrine and tactics." (p.24)

2. "Lack of attention to the required level of tactical detail to achieve success." (p.25)

3. "Doctrine provides no guidance on standard employment criteria for direct fire weapons." (p.25)

4. "In most cases,...unit SOPs [did not] provide specific guidance on how direct fire would be employed in specific instances." (p.25)

5. "...control of direct fire operations tends to be so decentralized during execution that the distribution of fires becomes ineffective." (p.27)

6. "...engaging targets of opportunity seems to be the norm...rather than massing fires in accordance with a plan." (p. 27)

7. TOW contribution to the NTC battlefield hits/kills was small. Contributing factors include:

- Maintenance (Turret, Automotive, MILES)
- Gunner/Crew skills
- Squad Structure (Lack of loader-BFV)
- Boresight and Zero Procedures
- Gunnery at NTC is degraded
- Lack of experience, technical knowledge and training with live ordnance had a negative impact on hit/miss results

- MILES TOW performance was sufficient to simulate basic TOW missile effects. (TOW II performance not assessed) (offense and defense Opns) (3-p.13)

8. Crew Knowledgeable, however, performance deteriorated as exercise continued. (offense and defense Opns) (3-p.18)

9. Organizational and DS maintenance problems:

- many system had only one launch tube operational
- 17 of 26 TOW platforms MC - Armor TF
- some sights required nitrogen purging
- limited ITV PLL available. (offense and defense Opns) (3-p.18)

10. Target acquisition a major problem, especially in offensive operations. (4-p.6)

11. Live fire technical gunnery proficiency is weak because it does not matter. (offense and defense data) (4-p.8)

12. We are being misled by round/kill data...We can not achieve 1.2 rounds/kill as a sterile table VIII range in USAREUR, but we can do better than 4.65-10.93:1 (offense and defense data) (4-p.8)

13. Doctrine:

- a. No link between IPB and direct fire planning (why and where to establish engagement area).
- b. Doctrinal basis for offensive direct fire planning is missing.
- c. No single source document for direct fire synchronization with combat multipliers.



- d. Doctrine for rehearsals/backbriefs needed (definitions, techniques, and intended results).
- e. Difference in doctrine form IN and AR schools:
  - 1). Range card/sector sketches
  - 2). Fire commands
  - 3). Drills
- f. Insufficient doctrine integrating M1/M2 employment.
- g. Doctrine should address and specify simultaneous vs. sequential direct fire tasks (planning, preparation, and execution).
- h. Leaders are not familiar with existing doctrine. (8-p.1)
- 14. Mounted and dismounted fires synchronization not trained. (offensive and defensive operations) (8-p.2)
- 15. (Execution phase) Number of rounds fired (volume of fire) is weak. (offensive and defensive operations) (8-p.2)
- 16. (Execution phase) Firing techniques weak (stayed exposed too long). (offensive and defensive operations) (8-p.2)
- 17. Direct fire doctrine does not provide sufficient guidance for offensive fire planning. (7-p.1)
- 18. Although very complete SOP's existed, in most cases NCO's did not acknowledge or follow this valuable tool. This was particularly true with the battalion SOP. (offense and defense operations) (9A-p.4)

1

Assigned rating is subjective based on study comments.  
Ratings numbers are as follows:

- 0 - NA/Not addressed and may require more study
- 1 - Major and minor training problems identified
- 2 - Minor training problems identified
- 3 - No major or minor training problems identified
- 4 - Identified as training strength

2

For brevity purposes the footnote annotations is as follows: (Study Sequence Number - Page Number from Study). Listed below are the study/briefing titles used and their

3

SSN :

STUDY TITLE: Applying the National Training Center Experience Incidence of Ground-to-Ground Fratricide. (SSN 10) (39 pages)

STUDY TITLES: National Training Center NCO Support Channel Reports: 1987 Summary (SSN 9A), (7 pages), 1ST QTR 1988 Summary (SSN 9B), (3 pages), 2ND QTR Summary (SSN 9C), (3 pages).

BRIEFING TITLES: USAARMC Direct Fire Issues: NTC Rotations 89-3/89-12 Armor School Direct Fire White Paper (Briefing slides) (SSN 6) (12 pages). Initial Company Collection Instrument Observations, Tactical Direct Fire Rotation 89-12. (SSN 7)(29 pages). Tactical Direct Fire Study Team Observations and Recommendations -- Rotation 89-12. (SSN 8) (5 pages)

BRIEFING TITLES: USAARMC Direct Fire Issues: NTC Rotations 89-3/89-12 Armor School Direct Fire White Paper (Briefing slides) (SSN 6) (12 pages). USSARMC Tank Direct Fire Focused Rotation 89-3 - Observations and Recommendations (Briefing) (SSN 4) (15 pages) USAARMC Observation Team Gunnery Special Focus Rotation NTC Rotation 88-4 (Initial briefing slides, rotation changed to 89-3) (SSN 5) (30 pages) [These three briefings are summarized and analyzed together because they apply to the same rotation]

BRIEFING TITLE: USAIS Direct Fire Capability, Modernization Force Assessment: "MILES vs TOW Missile" Excursion.

BRIEFING TITLE: Direct Fire Collection Plan. (13 pages)

STUDY TITLE: National Training Center (NTC, Observation Division, Combined Arms Assessment Team Report (CAAT): Planning, Preparation and Execution of Direct Fire Operations at the NTC. (53 pages)

3

SSN - Study sequence number

4

Ratings for this criteria includes comments from criteria 2-11.

5

Ratings for this criteria includes comments from criteria 13-18.

6

Ratings for this criteria includes comments from criteria 20-28.

Appendix B-1-B: Observer Controller Analysis and Rating Summary.

1  
OBSERVER CONTROLLER TAKE HOME PACKAGE  
COMMENTS ANALYSIS SUMMARY

Criteria	A	B	C	D	E	F	G	H
1. DIRECT FIRE PLANNING	1	45	96	3	120	36	3	116
2. COMMANDERS GUIDANCE:	1	54	63	4	113	45	10	21
3. - INTENT (TYPE FIRES + PURPOSE)	1	1	4	10	0	0	0	5
4. - IDENTIFIES DIRECT FIRE R&S PRIORITY (PIR/IR)	1	76	15	20	130	21	15	115
5. - IDENTIFIES ENGAGEMENT PRIORITY	1	5	10	0	25	16	0	0
6. - IDENTIFIES WEAPON'S POSITION/INTEGRATION	1	3	5	0	7	2	0	0
7. - IDENTIFIES TECHNIQUES OF FIRES	1	2	1	0	4	0	0	0
8. - IDENTIFIES FIRE PATTERNS	1	7	1	0	7	0	0	0
9. - DESIGNATES DIRECT FIRE REHEARSAL TYPE/TIMES	1	10	0	0	13	6	0	0
10. - DESIGNATES WEAPONS MAINTENANCE PRIORITY	1	13	0	0	21	35	5	17
11. - DESIGNATES CRITICAL CONTROL MEASURES	1	27	9	3	73	20	0	0
12. CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC):	1	40	37	17	134	38	10	63
13. - ESTABLISHED FOR ACTIONS ON THE OBJECTIVE	1	13	11	4	37	41	3	27
14. - ESTABLISHED FOR MOVEMENT PHASE	1	2	26	2	29	33	6	21
15. - ESTABLISHED IN ADEQUATE QUANTITY	1	25	18	1	25	26	0	0
16. - EASILY IDENTIFIABLE	1	22	11	0	31	12	0	0
17. - FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION	1	21	8	4	24	10	4	11
18. - DESIGNATED TO PREVENT FRATRICIDE	1	7	12	0	11	7	0	4
19. - ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL	1	7	17	0	13	35	0	2
20. DIRECT FIRE PREPARATION	1	37	11	10	51	30	9	31

<u>Criteria</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>	<u>H</u>
21. - DIRECT FIRE PLAN/CONTROL MEASURES:	1	13	27	4	113	67	21	87
22. * DISSEMINATED	1	23	10	8	65	34	0	0
23. * UNDERSTOOD	1	32	11	1	53	21	0	0
24. - COMPANY/PLATOON/SECTION/ SQUAD FIRE PLANS PREPARED	1	45	6	0	123	26	0	76
25. - INDIVIDUAL WEAPON'S RANGE/SKETCH CARDS PREPARED	1	56	1	1	76	112	0	103
26. - PREPARATION FOR COMBAT CHECKS	1	62	6	56	63	21	0	154
27. - PREPARATION FOR FIRE CHECKS	1	23	17	12	58	15	0	76
28. - DIRECT FIRE REHEARSALS CONDUCTED	1	39	5	0	36	59	7	63
29. - SUPERVISION	1	0	46	19	44	17	5	32

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Key:

- A. Overall Rating (0-3)
  - 0 - Not Addressed
  - 1 - Problems
  - 2 - Adequate
  - 3 - Optimal
- B. Understood
- C. Not Understood
- D. Consistently Applied
- E. Inconsistently Applied
- F. Not Applied
- G. Effectively applied
- H. Not Effective applied

1

The summary numbers were determined by reviewing OC comments from FY89 take-home packages. Not all comments specifically referenced direct fire operations, however, content could be applied or alluded too. For example, "unit failed to develop a plan although adequate time was available." This comment would therefore apply to criteria 1.

Appendix B-2-A

MANEUVER DOCTRINE  
ANALYSIS AND RATING SUMMARY

Criteria	A	B	C	D	E	F	G
1. DIRECT FIRE PLANNING	1	82	68	10	0	42	12
2. COMMANDERS GUIDANCE:	1	10	10	0	0	2	3
3. - INTENT (TYPE FIRES + PURPOSE)	2	20	16	4	0	0	1
4. - IDENTIFIES DIRECT FIRE R&S. PRIORITY (PIR/IR)	1	16	14	0	0	3	1
5. - IDENTIFIES ENGAGEMENT PRIORITY	1	2	2	0	0	1	0
6. - IDENTIFIES WEAPON'S POSITION/ INTEGRATION	1	33	20	13	0	1	0
7. - IDENTIFIES TECHNIQUES OF FIRES	2	1	1	0	0	0	0
8. - IDENTIFIES FIRE PATTERNS	2	1	1	0	0	0	0
9. - DESIGNATES DIRECT FIRE REHEARSAL TYPE/TIMES	0	0	0	0	0	0	0
10. - DESIGNATES WEAPONS MAINTENANCE PRIORITY	2	1	1	0	0	0	0
11. - DESIGNATES CRITICAL CONTROL MEASURES	1	3	2	1	0	3	0
12. CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC):	1	35	21	14	0	13	23
13. - ESTABLISHED FOR ACTIONS ON THE OBJECTIVE	1	7	4	1	0	1	3
14. - ESTABLISHED FOR MOVEMENT PHASE	1	1	1	0	0	1	0
15. - ESTABLISHED IN ADEQUATE QUANTITY	*1	2	1	1	0	0	0
16. - EASILY IDENTIFIABLE	1	4	1	3	0	0	0
17. - FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION	1	3	3	0	0	1	0
18. - DESIGNATED TO PREVENT FRATRICIDE	2	3	1	2	0	0	0
19. - ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL	1	6	3	2	0	4	1
20. DIRECT FIRE PREPARATION	1	3	3	0	0	2	0
21. - DIRECT FIRE PLAN/CONTROL MEASURES:	*1	2	1	1	0	0	1
22. * DISSEMINATED	*1	3	3	0	0	0	0
23. * UNDERSTOOD	2	3	2	1	0	0	0
24. - COMPANY/PLATOON/SECTION/SQUAD FIRE PLANS PREPARED	0	0	0	0	0	0	0

Criteria	A	B	C	D	E	F	G
25. - INDIVIDUAL WEAPON'S RANGE/ **1 SKETCH CARDS PREPARED	0	0	0	0	0	0	0
26. - PREPARATION FOR COMBAT CHECKS*1	0	0	0	0	0	0	0
27. - PREPARATION FOR FIRE CHECKS	0	0	0	0	0	0	0
28. - DIRECT FIRE REHEARSALS CONDUCTED	1	3	3	0	0	1	2
29. - SUPERVISION	2	1	1	0	0	0	0

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KEY:

A. Overall Analysis Rating (0-3)

0 - Not Addressed

1 - Problems

2 - Adequate

3 - Optimal

B. Total number of references to criteria.

C. Number of references that alluded to criteria but did not specifically address it in terms of offensive direct fire operations:

D. Number of references that specifically addressed criteria during offensive direct fire operations.

E. Total number identified as optimal.

F. Total number of identified major problems.

G. Total number of identified minor problems.

\* Subjective rating adjustment based on lack of specific reference to the criteria, limited discussions and lack of TTP.

\*\* Subjective rating as a problem due to conflicts between lower level manuals.

PAGE

2-1

CHAPTER 2  
COMMAND AND CONTROL

2-2 SECTION I. COMMAND AND CONTROL  
RESPONSIBILITIES

(a) -- alluded to  
(a) -- specifically addressed

2-2 - Command and control is the process through which the activities of the task force are planned, directed coordinated and controlled to accomplish the mission and controlled to accomplish the mission.

Criteria: 1(a)

Minor Problem (1): C2 term not defined in FM 71-1 and FM 101-5-1 definition does not include the aspect of "planned" (p1-16)

2-2 -The commander is responsible for command and control of organic, assigned, attached, and supporting forces and for their synchronization into his operations

Criteria: 1(a)

2-2 2-1 ORGANIZATION

2-2 - The command and control organization is established by task force SOP.

Criteria: 1(a),12(a)

Major Problem(1,12): FM 71-1 states that "SOP's simplify the control of maneuver." No discussion of control of direct fires

(p2-33)

2-2 2-2 RESPONSIBILITIES

2-2 - Battalion Task Force Commander. The commander commands all elements of the task force. He provides his subordinates with missions, taskings, and a clear statement of his intent. The commander allows subordinates freedom of action in implementing his orders.

Criteria: 2(a), 3(a)

Minor Problem(2): FM 71-1 does not outline company cdr's as having the same subordinate requirements. (p2-1)

2-4 - Command Sergeant Major... may act as the commander's troubleshooter in supervising critical aspects of an operation.

Criteria: NA

- S2 ... During operations, he updates the IPB and prepares and monitors reconnaissance and surveillance plans in conjunction with the S3

Criteria: NA, but applies to criteria not covered in this study.

2-5 - The BICC's primary responsibility is to perform unit intelligence collection, processing and disseminating actions as tasked by the S2.

Criteria: NA, but applies to criteria not covered in this study.

2-7 - Fire support officer...coordinates all fire support for battalion task force operations and as such, the battalion FSO is also the battalion FSCORD...The FSO monitors the positioning of the battalion mortar platoons and employs its fires.

Criteria: NA

2-7 - Air defense artillery officer...advises the commander on employment of ADA assets. During the planning process, he is at the main CP to ensure the integration of air defense into the concept of operation. Criteria: 19(a)

Major Problem(19): No one is specifically designated to integrate direct fire systems with air defense systems. It may be alluded to by the reference to integration into the concept. However, what actually occurs, as observed at the NTC is the no one plans for the integration of direct fire systems into air defense plan.

## 2-7 SECTION II. COMMAND AND CONTROL FACILITIES

- No specific comments identified.

### 2-8 2-3 MAIN COMMAND POST

- No specific comments identified.

### 2-8 2-4 TACTICAL COMMAND POST

- No specific comments identified.

### 2-9 2-5 COMMAND GROUP

- No specific comments identified.

### 2-9 2-6 COMBAT TRAINS COMMAND POST

- No specific comments identified.

### 2-9 2-7 FIELD TRAINS COMMAND POST

- No specific comments identified.

## 2-10 SECTION III. COMMAND AND CONTROL PROCESS

Criteria: 1(a)

- The task force command and control process involves planning, coordinating, and executing combat operations. While higher level headquarters give broad missions and allocate assets to fight the close and deep battle, task forces directly control and synchronize the actions of company teams, supporting fires and obstacles on the ground and against the enemy. Key command and control considerations for the battalion/task force commander includes--

- \* Making maximum use of time.
- \* Conducting physical reconnaissance.
- \* Planning for and maintaining flexibility
- \* Instilling and requiring initiative from all leaders.
- \* Decentralizing execution.
- \* Provide clear, concise missions.
- \* Synchronizing all assets.
- \* Designating and sustaining main effort.

Major Problem (1): This discussion addresses C2 specifics but fails to mention direct fire considerations. [Note: "supporting supporting fires as normally used in this PW's writing refers to indirect and not direct fires]



## 2-11 2-8 PLANNING

- Plans are the initial basis for action, but commanders must expect considerable variance from plans because the situation will change rapidly...

Criteria: 1(a)

- a. In planning an operation, the task force commander focuses on developing a concept of the operation that best accomplishes the task force's mission and the brigade's and division's intent. He assigns missions and tasks to subordinate elements and allocates forces and establishes priorities to make the concept work.

Criteria: 1(a), 4(a), 5(a), 10(a)

Minor Problem(1): "established priorities" could be expanded on to assist commanders.

- b. Planning must be rapid to provide adequate time for preparation, coordination, and planning. Planning is continuous. Initial plans are updated and refined but complete change is avoided especially if it negates subordinate planning and preparation.

Criteria: 1(a), 20(a)

- c. Plans must be simple to understand and prevent undue difficulty in execution. While conciseness is required in plans, there must be sufficient elaboration for understanding and coordination.

Criteria: 1(a), 23(a)

- d. Standing operating procedures that are detailed, understood and practiced allow for short concise plans...

Criteria: 1(a), 23(a)

- e. ...the troop-leading procedures are the basis for planning and preparation...

Criteria: 1(a), 22(a)

## 2-12 2-9 FACTORS OF MISSION, ENEMY, TERRAIN (AND WEATHER), TROOPS AND TIME AVAILABLE

Criteria: 1(a)

Major Problem(1): Discussion in 71-1 (p2-17-19,22) alludes to the fact that the BN S2 will provide all ETT information -- There is no requirement at company level to do independent analysis.

Major Problem(1): ETT-7 is mentioned but is not defined or explained in FM 71-1. It only references a figure 2-1 and states that it is suppose to "show the relationship." (p2-16)

- a. Mission...The "why" in the mission statement is the basis of the task force commander's intent for the operation. He develops his intent in terms of overall effect on the enemy, resulting task force positioning, and any activities that are otherwise critical to accomplish his higher commander's plan.

Criteria: 1(a), 3(a)

- b. Enemy...(2) IPB...provides the commander with templates of likely enemy positions and enemy ground and air avenues of approach, as well as other information.

Criteria: 1(a), 4(a), 19(a)

Note: This applies more to other criteria that is not discussed in this study.

- b. Enemy...(3) The task force uses its scouts, infantry patrols, and any supporting ground surveillance radars to verify enemy information.

Criteria: 1(a), 4(a)

Note: This applies more to other criteria that is not discussed in this study.

2-13 - c. Terrain (and Weather)...(1) Terrain analysis is the process of examining the military aspects of terrain and their effects on friendly and enemy capabilities to move, shoot and communicate. The military aspects of terrain include the following five factors (OCORA)...The military aspects of terrain at battalion-level are considered in terms of platoon positions and actions.

Criteria: 1(a), 4(a), 6(a)

- c. Terrain (and Weather)...(2) Weather...adverse weather favors the attacker, even though mobility and command and control are degraded. Task force plans and orders must accommodate adverse weather (including the effects of smoke) and take advantage of them.

Criteria: 1(a), 16(a)

Minor Problem(1,16): Doesn't specifically address considerations of weather on direct fire system. This is an important consideration that drives plan, control measures and positioning.

#### 2-14 2-10 DECISION-MAKING PROCESS

- b. The decision-making process is as detailed--or as simple--as time allows. The commander plays the central role in this process, with the staff providing advice and information related to their respective areas...The decision-making process must be able to accommodate rapid changes on the battlefield.

Criteria: 1(a), 2(a)

#### 2-14 2-11 TROOP-LEADING PROCEDURES

2-17 - (1) Receive the mission...(b)...The commander makes rapid deductions and issues instructions to his staff, who issue a warning order. The commander should disseminate as much preliminary information as possible to his subordinates so that they may begin their troop-leading procedures. He also determines what critical information he needs from his staff, higher headquarters, and reconnaissance to continue the planning process.

Criteria: 1(a), 22(a), 4(a)

2-17 - (3) Make a tentative plan...(a) Estimate of the situation...incorporates analysis of the factors of METT-T and analysis of friendly courses of action into a process that allows the commander to select the best course of action as the basis for the task force plan. At the task force level, the estimate is a mental process...

Criteria: 1(a)

2-17 - Step 1. Detailed mission analysis...The commander gives the staff the restated mission and guidance, including the constraints and implied tasks identified during the mission analysis.

Criteria: 2(a)

Minor Problem(2): The FM doesn't give the reader/cdr any examples of specific type guidance that should be provided.

2-18 - Step 2. Develop situation and courses of action...the task force commander provides his intent, which his visualization of how the enemy is to be defeated and of the battlefield after the mission is accomplished... It is a statement of purpose or intended outcome, rather than guidance about how to conduct the operation. The commander and the S3 then develop tentative courses of action:

- For offensive missions, considerations include subordinate unit objectives, how the task force will move along the avenues of approach, the form of maneuver used against the enemy, designation of the main attack, supporting attack, and reserve forces, as well as other considerations to accomplish the mission.
- ...Task organization is the primary method the task force commander uses to ensure that companies have the combat power they need to accomplish their assigned missions.

Criteria: 2(a)

Minor Problem (2): Same as above.

Criteria: 1(a), 2(a)

Major Problem (1): Doesn't address firepower aspects discussion focuses on maneuver.

Criteria: 1(a), 2(a)

2-18.9- Step Analyze courses of action-wargame...wargaming is a mental process of visualizing each step of the battle, considering task force actions, enemy reactions, and task force counteractions...Through the IPB, the commander and S2 develop a clear picture of the battlefield, the courses of action available to the enemy commander, enemy actions that disclose which course of action the enemy will adopt(indicators), measures used to establish decision points or lines that are used to specify points during friendly or enemy movement that require task force action. When a decision point is reached, the task force...takes a specified action, such as counterattack, fire a group of targets, or displacing to a supplementary position... Wargaming often involves the entire staff in planning the use of combat support assets, to include

Criteria: 1(a),11(a),12(a)

Major Problem (1,12): Although there is a specific discussion of establishing control measures there is no specific discussion of its application to direct fire systems. If does specifically identified indirect fire system and maneuver control

2-20 - (5) Reconnoiter...The task force commander may assign certain reconnaissance tasks to each of his subordinates.

Criteria: 1(a),4(a)

Minor Problem (1,4): No discussion of recon tasks a commander should consider. [Note: 71-1 does require recon to ID "fire control references." (p2-8)]

2-20.1- (6) Complete the plan.

- (a). Using the latent reconnaissance and intelligence information, the commander's concept of the operation is finalized, details are added, and the order is prepared... The final task organization, plans for fire control, CSS, security, control measures, and lateral or flank coordination are refined and incorporated into an OPORD...

Criteria: 1(a),11(a),12(a)

Major Problem (1,11,12): 71-1 has no specific requirement to have plans for fire control. (p2-8)

Major Problem (12): 71-1 Graphic offensive example only has maneuver and indirect control measures (p2-10)

Major Problem (1,12): 71-1 No discussion in C2 to develop direct fire plan at company level.

Major Problem (1): FM 7-7J specifically, discusses employment of direct fire system in the defense but not in offense: "In the defense he (Plt Ldr) decides where to put his weapons and how to tie the defense together. In an attack he decides how to move and how to seize the obj...(p3-5)

Minor Problem (1,12): 71-1 offensive and defensive matrix has no direct fire control measures/discussion (p2-9,11)

- (b). An order consisting of at least an overlay with graphics and an execution matrix may be used in fast-moving situations...

Criteria: 1(a),12(a)

Major Problem (1,12): 71-1 No discussion in C2 to develop direct fire plan at company level.

Minor Problem (1,12): 71-1 offensive and defensive matrix has no direct fire control measures/discussion (p2-9,11)

2-21 - (8). Supervise and refine the plan.

Criteria: 1(a), 20(a), 23(a), 23(n)

- (a). The commander and his staff supervise the preparations for the operation. These preparations include coordination, reorganization, fire support, engineer activities, maintenance, resupply and movement.

Major Problem (20): FM 71-2 & FM 7-7J preparation specifically address some areas but not direct fire. [Note: Fire support is normally interpreted by most units to refer to indirect fires not direct fires.

- (b). Rehearsals are conducted to reinforce both the scheme of maneuver and the fire plan. Whenever possible, rehearsals are conducted under limited visibility or NBC conditions and over similar terrain. Key staff and subordinate commanders participate in rehearsals to identify problem areas and contingency actions, determine movement and reaction times, enhance coordination, and refine the plan...

Major Problem (1,23): 71-1 discusses fire rehearsals but only in the context of indirect fires, not direct fires. (p2-14)

- (c). Refinement of the plan is a continual process that does not stop at the beginning of the operation.

#### 2-22 SECTION IV. INTELLIGENCE PREPARATION OF THE BATTLEFIELD

Criteria: NA

- No specific comments identified.

Major Problem (1): 71-1 requires alot of information be given to Co's as the result of the IPB. 71-2's discussion does not address all these items.

#### 2-23 2-12 PURPOSE

Criteria: NA

- No specific comments identified.

#### 2-23 2-13 FUNCTIONS OF THE IPB PROCESS

Criteria: 1(a),4(a),6(a)

2-24 - (a). Observation and fields of fire. Observation is the ability to see over a particular area. Fields of fire refer to the area a weapon can cover effectively from a given point

- (b). Cover and concealment. Cover is protection from the effects of fire...

2-25 - d. Function 4-Threat Evaluation... (3) During threat Criteria: 1(a),4(a)

evaluation, the S2 identifies high value targets.

[Note: not normally discussed in conjunction with the use of direct fire systems.]

2-26 - (a) A TAI is an area or point usually along a mobility Criteria: 1(a),4(a),12(a)

corridor, or is an engagement area (EA) where the interdiction of threat forces by maneuver, fires, and/or jamming will deprive or reduce a particular threat capability.

Minor Problem (1,12): Def discrepancy, FM 101-5-1 defines TAI: An area or joint point along a mobility corridor, the successful interdiction of which will cause the enemy to either abandon a particular course of action or require him to use specialized engineer support to continue. (p1-70)

- (b) A decision point (DP) is a point or area at which a commander must make a decision to engage threat forces. Usually a DP is associated with each TAI. The S2 must recommend DP's in conjunction with the S3.

Minor Problem (12): Decision point is not defined in FM 101-5-1.

2-29 SECTION V. COMMAND AND CONTROL COMMUNICATIONS

Criteria: NA

- No specific comments identified.

2-29 2-14 COMMUNICATIONS-ELECTRONICS RESPONSIBILITIES

Criteria: NA

- No specific comments identified.

2-30 2-15 RADIO NETS

Criteria: NA

- No specific comments identified.

2-31 2-16 HAVESDROP SYSTEM

Criteria: 1(a), 12(a)

2-31 - Havesdrop...requires all stations to monitor and use message traffic on a given net, even if they are not the direct recipients of the message.

Note: This is an execution phase action but can/should be planned for in OPORD or SOP's. This method facilitates ID of friendly locations, actions.

2-32 2-17 MOBILE SUBSCRIBER EQUIPMENT

Criteria: NA

- No specific comments identified.

2-32 2-18 COMMUNICATION SECURITY AND ANTIJAMMING

Criteria: NA

- No specific comments identified.

2-33 SECTION VI. OTHER COMMAND AND CONTROL PROCEDURES

Criteria: NA

- No specific comments identified.

2-33 2-19 OPERATIONS SECURITY

Criteria: NA

- No specific comments identified.

2-34 2-20 FIRE CONTROL

Criteria: 1(a),7(a),8(a),12(a),18(a)

- Control of battalion task force fires is critical to the effective employment and massing of available fire support. Fire control is used with maneuver to bring the maximum available direct and indirect fires on the enemy's

Major Problem (1,12): Discrepancy on fire control measures between this section, para. differ from the discussion in offensive chapter (ref p3-39,para3-20)

Major Problem (5): There are substantial discrepancies between 71-2, 71-1, 17-16 and 7-7J reference this criteria.

B-2-B-7

positions or formation while avoiding the mistaken engagement of friendly forces (fratricide). A normal part of a company team's mission is telling it where, when, and what to engage by direct and indirect fire. Fires should be distributed to completely cover the enemy. Ideally, each weapon should fire at a different target or part of the enemy. With the lethality of modern weapons, multiple engagements of the same enemy target waste ammunition and lessen the ability to quickly destroy the enemy. Fire control measures are used to distribute fires, designate targets, and protect friendly forces. Fire control measures normally used by the battalion task force are--

- \* Sectors of fire.
- \* TRP's and RA's
- \* Restrictive fire control measures.
- \* Priorities of engagement.
- \* Pyrotechnics and visual markers.
- \* Checkpoints and trigger points

Minor Problem (1,12): Use of checkpoints as stated is not IAV def. in FM 101-5-1 which states: "...Checkpoints are not used as reference points in reporting enemy locations." eg. designate targets.

Minor Problem (1,12): Trigger points are not defined in FM 101-5-1, there is no graphic measure for this control measure.

### 3-1 CHAPTER 3 OFFENSIVE OPERATIONS

3-1 - The commander selects the time and place to concentrate and synchronize task force combat elements to overcome the enemy's defense; to destroy his command, control, and communications system; and to defeat him in detail.

Criteria: 1(a),2(a)

### 3-2 SECTION I. FUNDAMENTALS OF OFFENSIVE OPERATIONS

3-2 3-1 PURPOSE OF THE OFFENSE  
- No specific comments identified.

Criteria: NA

### 3-2 3-2 CHARACTERISTICS OF OFFENSIVE OPERATIONS

3-3 - b. Concentration is the massing and synchronization of overwhelming combat power against an enemy weakness. Concentration is achieved by--

Criteria: 1(a)

- \* Planning on the basis of information generated by aggressive reconnaissance.
- \* Fixing the enemy to prevent his reaction to maneuver.
- \* Rapidly massing forces and fires to overwhelm the enemy defense...

3-3 - c. Speed...is achieved by--

Criteria: 1(a), 3(a), 20(a)

- \* Planning and rehearsing battle drills...
- \* Exercising responsive command and control...
- \* Isolating enemy forces through fixing and suppressing fires...

Minor Problem (1,3,28): 71-1 does not discuss the "planning and rehearsal battle drills..." comment (p3-2)

Minor Problem (28): Rehearsals are only discussed for battle drills. NYC highlights that units interpret this to be the "only" type rehearsals they do for offensive operations.

B-2-B-1

3-3 - d. Flexibility...is achieved by--

- \* A command and control system that allows the commander to rapidly transmit decisions during the battle.
- \* The use of FRAGOs, checkpoints and reserve graphic control measures.

Minor Problem (1): 71-1 does not discuss this concept.

Criteria: 12(s)

#### 3-4 3-3 TYPES OF OFFENSIVE OPERATIONS

3-4 - b. The task force normally participates in these operations as part of a larger force. Commanders at each level--

- \* Find or create a weak point.
- \* Suppress enemy fires.
- \* Isolate the enemy and maneuver against weak points.
- \* Exploit success.

Criteria: 3(a)

#### 3-4 3-4 SEQUENCE OF AN ATTACK

3-4 - a. Reconnaissance...Information on the avenues of approach, obstacles, and the enemy positions is critical to planning the attack. Reconnaissance continues throughout the attack.

Criteria: 1(a),4(a),17(a)

Major Problem (1,4,17): 71-1 does not discuss this concept of sequence of an attack.

3-5 - c. Attack. The enemy position is attacked by fire, assaulted or bypassed.

Criteria: 6(a)

#### 3-5 3-5 FORMS OF MANEUVER

Criteria: 1(a),6(a)

Major Problem (1,6): Specifically discusses maneuver but does not address firepower roles.

3-5 - Task force attacks are of two basic types: hasty and deliberate. The two are distinguished primarily by the time available for planning and the extent of preparation...

Criteria: 6(a)

3-5 - a. The basic forms of maneuver used in the attack are envelopment, turning movement, infiltration, penetration, and frontal attack...

Criteria: 6(a)

3-5 - (1) Envelopment...(a) When the task force conducts and envelopment one or more companies or teams normally make supporting attacks to fix the enemy while other companies of the task force maneuver against the enemy's flank or rear. The supporting attack must have sufficient combat power to keep the enemy fully engaged while the enveloping force closes...

Criteria: 6(a)

3-5 - (1) Envelopment...(b) The enveloping force may be mounted or dismounted, but it must have the mobility and combat power to achieve its purpose.

Criteria: 6(a)

3-6.7 - (2) Turning movement...The task force normally conducts a turning movement as part of a larger unit's operation. Criteria: 6(a)

3-7 - (3) Penetration...A successful penetration depends on surprise and the attacker's ability to suppress enemy weapons, to concentrate forces at the point of attack, and to quickly pass sufficient force through the gap to destroy the enemy's defense...A penetration is planned in three phases: Criteria: 6(a)

### 3-10 3-6 MOVEMENT TECHNIQUES AND FORMATIONS

#### 3-10 - b. Formations...

3-10 - (1) Column formation. The task force moves in column formation when early contact is not expected, and the objective is far away... Criteria: 6(a)

- \* provides majority of firepower to the flanks...

3-12 - (2) Wedge formation...used when enemy contact is possible or expected, but the location and disposition of the enemy is vague...considerations are as follows: Criteria: 6(a)

- \* Provides for maximum firepower forward and good firepower to the flanks.

3-13 - (3) V formation...is most suitable to advance against a threat known to be to the front of the task force. It may be used when enemy contact is expected and the location and disposition of the enemy is known. Considerations are as follows: Criteria: 6(a)

- \* Provides for good firepower forward and to the flanks.

3-14 - (4) Echelon formation...used when the task force provides security to a larger moving force. Considerations are as follows: Criteria: 6(a)

- \* Provides for firepower forward and in the direction of echelon.

3-14 - (5) Line formation...used when continuous movement with maximum firepower to the front is required. Considerations are as follows: Criteria: 6(a)

- \* Permits maximum firepower to the front.

3-15 - (6) Box formation...most flexible Criteria: 6(a)

- \* Provides firepower to the front and flanks

3-15 - (7) Diamond formation...variation of the box formation... Criteria: 6(a)

### 3-16 SECTION II. THREAT DEFENSIVE DOCTRINE

- No specific comments identified.

Criteria: NA



3-16 3-7 WHY THE THREAT DEFENDS  
- No specific comments identified.

Criteria: NA

3-17 3-8 HOW THE THREAT DEFENDS  
- No specific comments identified.

Criteria: 1, 4

Major Problem(1,4): It does not ID the enemies use of "dummy positions" which is critical for both direct fire and maneuver. (critical FIR,IR)

### 3-19 SECTION III. PLANNING FOR OFFENSIVE OPERATIONS

#### 3-19 3-9 OFFENSIVE IPB AND RECONNAISSANCE

3-19 - a. Offensive IPB coupled with aggressive reconnaissance provides the commander the following information:

Criteria: 1(a), 4(a), 17(a)

- \* Location of existing and reinforcing obstacles.
- \* Enemy positions and orientations
- \* Enemy intent based on his dispositions...

3-19 - c... Supporting and direct fires are used to impede enemy preparations to the degree practical and desirable.

Criteria: 1(s), 6(a)

#### 3-19 3-10 RECONNAISSANCE AND SURVEILLANCE PLANNING

3-20 - c. Planning considerations...(2) Intelligence requirements (IR) are prioritized for RAS missions, and further refined as specific instruction orders...

Criteria: 1(a),4(a)

3-21 - d. Planning process...

Criteria: 1(a),4(a)

(1) The task force S2 prepares a detailed RAS plan based on information generated during the IPB process.

Major Problem (1): Highlighted "maneuver units" RAS considerations appear to be defensive not offensive considerations.

(2) Specific taskings are given to company teams, the scout platoon, GSE sections and any other element that has a reconnaissance and surveillance capability. As a minimum, the RAS plan should include:

- (a) Maneuver units.
  - \* Number and location of OPs required, or sectors requiring surveillance.
  - \* Ambush requirements with locations and effective times.

- \* Reaction forces requirements.
- \* Obstacles to be protected.
- \* Patrol requirements with routes, objectives and times.

...(e) Coordinating instructions...

Criteria: 1(a), 12(s)

- \* Rules of engagement and disengagement.

(4) To develop a useful RAS plan, the S2 must adhere to the following elements:

Criteria: 1(a), 2(a), 4(a), 18(a)

- (a) Commander's guidance...

(5)... All elements must know where patrols and ops are located to avoid combat with friendly forces.

### 3-22 3-11 CONCEPT OF OPERATION

#### 3-23 a. Maneuver...

Criteria: 1(a), 13(a), 6(a)

(1) The scheme of maneuver is the central expression of the commander's concept of the operation...

- \* Designates the main and supporting attacks.

- \* Describes the movement and positioning of maneuver forces from the line of departure through actions on the final objective.

- \* Directs the task force formation to be used and dictates specific points where the formation changes or company teams move to supporting positions.

- \* Provides orientation for the movement or attack using either zones of action, axes of advance, or directions of attack.

- \* Designates main attack objectives along with positions and intermediate objectives, if used.

(2) The scheme of maneuver...

- (a) ...also addresses actions on the objective and synchronization of the close assault.

- (b) Actions on the objective...The commander must develop a plan to isolate and destroy individual enemy units (usually platoons or smaller) by achieving overwhelming combat power ratios at the decisive point and time. The plan must enable the commander to bring as much combat power to bear as possible by synchronization of maneuver elements and fires. Maneuver units must arrive at their attack by fire positions or commence the assault simultaneously in order to achieve the desired combat power ratios and a "piecemeal" attack. Fires must be planned to enhance combat power ratios. To isolate enemy units from one another, the commander may use direct and indirect fires, including smoke for obscuration and maneuver to fix units or prevent reinforcement.

- (c) Reverse planning...serves to clarify the commanders intent and to prevent over-emphasis on movement.

#### 3-24 b. Fires.

Criteria: 1(a), 3(a), 5(a), 12(a), 13(a)

(1) Fire support is used to destroy, neutralize, or suppress the enemy, and to provide smoke and illumination that facilitates task force maneuver...

Major Problem (1): This discussion only focuses on indirect fires not firepower or all fires. (eg. direct fires)

(5) Other fire support tasks in the attack include:

- (a) Preparation fires. Preparation fires, including preplanned CAS, can suppress, neutralize, and destroy enemy positions on the objective.

Minor Problem (1): Fires is not defined in FM 101-5-1

- (b) Obscuration and screening fires. Fires using smoke assist breaching efforts, cover friendly maneuver, and can aid in deception efforts.

- (c) Counterbattery fires...

- (d) Illumination fires...

- (e) Priority targets. Priority targets are normally allocated to weight the main attack.

(f) Fires during the assault. Assault fires are usually executed in the following sequence:

- \* Suppression fires to prevent the enemy from observing and engaging friendly elements and to conceal the movement of companies.

- \* Concentrated fires to destroy enemy fighting positions near the initial objective.

- \* Subsequent fires that concentrate on deeper objectives.

(g) Fires during consolidation...

### 3-25 3-12 MAIN AND SUPPORTING ATTACKS

3-25 - ...commander designates a main and any supporting attacks. Criteria: 1(a), 6(a)

3-25 a. Main Attack...attacks by fire to destroy an enemy force may also be the main attacker's mission... Criteria: 1(a), 6(a)

(3) ...The main attack is the task force's main effort at the decisive phase of the attack. The main effort is the focus of combat power at any given time during the attack.

(4) In planning the scheme of maneuver, the main attack must have sufficient combat power and support to accomplish its mission...

- \* Assigning the main attack to the companies with the highest combat power and bold, aggressive leaders.

- \* Allocating additional combat platoons.

3-26 \* Positioning overwatch or support-by-fire elements to support. Criteria: 1(a), 6(a), 12(a)

- \* Coordinating adjacent unit or attack helicopter support by fire...

3-26 b. Supporting Attack... Criteria: 1(a), 3(a), 6(a)

(1) ...The supporting attack contributes to the success of the main attack by accomplishing one or more of the following:

- \* Occupying terrain to support by fire the maneuver of the main attack.

- \* Fixing the enemy in position...

(2) Supporting attacks place fires on the objective, and/or on known or likely supporting enemy positions. Fires are used to destroy as many of the defender's major weapons systems as possible before the main attack reaches the objective. Supporting attacks by fire should come from a different direction than the main attack. This forces the enemy to defend in two directions and avoids the masking of friendly fires as the main attack closes on the objective. Forces used in a support-by-fire role should be considered as potential reserve forces...

(3) The supporting attack may be by fire and maneuver. In this case, one or more company teams are tasked to secure or seize terrain dominating the main attack's objective. This form of supporting attack is used when conditions will not allow a supporting attack by fire. The task force seldom can have more than one supporting attack by fire and maneuver because this will weaken the main attack, make the attack difficult to control, and increase the chance of a piecemeal attack. However, it is possible to have one supporting attack by fire and one by fire and maneuver.

### 3-27 3-13 COMPANY TEAM MISSIONS IN THE ATTACK

3-27 - ...The task force commander assigns companies and company teams one of four basic missions to support the task force scheme of maneuver.

a. Attack to Seize/Secure a Terrain Objective...The commander must clearly state the purpose to be achieved by seizing or securing the objective.

b. Overwatch...supports the movement of other elements by placing direct fire or adjusting indirect fire on enemy forces that can engage the supported unit. Designation of the element to be overwatched and fire control measures must be assigned...Overwatch positions are usually shown graphically as checkpoints.

c. Attack by Fire. This mission requires engaging an enemy force with direct fire to destroy, fix, or suppress it. Positions and sectors of fire or other fire control measures can be assigned.

d. Reserve. - "support attack Co/Tn by fire" (p3-13).

Criteria: 1(a), 2(a), 3(a), 6(a), 12(a)

Major Problem (1): FM 71-2 does not address its 4 basic missions as directed in FM 71-2.

Major Problem (1,2): FM 71-1 addresses seize but not securing of an objective (p3-12)

Major Problem (1,2,6,11,12): FM 71-1 states companies can be assigned "support-by-fire" missions. (p3-12) FM 71-2 does not address concept except as a mission for tanks (ref para b3-28 below) In addition FM 71-2 & FM 101-5-1 do not define "support-by-fire."

Minor Problem (1,12): FM 71-1, FM 7-7J and FM 17-15 uses overwatch attack-by-fire, support-by-fire, and base-of-fire almost synonymously.

Major Problem (1): FM 71-2 lists TF tasks that TF's can assign to CO/TN's as the reserve. These tasks are not listed in FM 71-1

### 3-27 3-14 RESERVE CONSIDERATIONS

### 3-28 3-15 SYNCHRONIZATION OF OFFENSIVE OPERATIONS

3-28 - a. Maneuver.

- (1) Tanks...primary mounted assault element of the task force...Tanks may be assigned support-by-fire missions when their direct fires are needed to support assaults, or if obstacles initially prevent them from assaulting the enemy...

- (2) Infantry...BFV's are used to overwatch tanks or dismounted infantry when facing more than light antiarmor resistance...

- (3) Antiarmor company...maneuvers to provide overwatch and support-by fire...

Criteria: 1(a), 6(a), 12(a)

Note: comment above para

**3-32 3-16 PLANNING CONSIDERATIONS FOR NIGHT ATTACKS**

3-32 - c. The dismounted night attack is conducted in four phases:...

Criteria: 1(s)

Major Problem (1): FM 71-1 does not discuss the same 4 phases.

Major Problem (1): FM 71-1 does not discuss night attacks, especially in the same detail. It does discuss limited visibility considerations (p3-37). FM 71-2 does not discuss these limited visibility considerations.

Major Problem (1): FM 17-1 does not discuss night attacks, especially in the same detail. It does discuss limited visibility considerations (p3-34). FM 71-2 does not discuss these limited visibility considerations.

Major Problem (1): Limited visibility discussion in FM 71-1 differs from that in FM 17-15 & FM 7-7J.

3-32.3- (1) Preparation...The most critical preparation for the attack is the positioning of the support elements that generate suppressive fires at the point of attack.

Criteria: 6(a), 20(a)

3-33 - (2) Movement - No specific comments identified.

Criteria: 1, 14

Major Problem (1,14): No discussion of direct fire during movement.

3-33 - (3) Assault. The support element establishes overwatch positions on the flanks of the point where the enemy's protective barriers (minefields) will be breached...

Criteria: 1(a), 6(a), 13(a)

3-33 - (a) ...The support force and heavy mortars fire into the interior of the position to prevent the enemy from repositioning forces.

Criteria: 1(a), 3(a)

3-33 - (b) The assault element must be able to control fires of the close overwatch forces to keep fires forward of the assault element. Planning should include visible light signals to identify assault elements and to lift or shift fires.

Criteria: 1(a), 12(a), 13(a), 15(a)

3-33 - (4) consolidation and reorganization...

Criteria: 1, 13

3-33.4- d...Consideration should be given to the following alternative systems of communication:

Criteria: 1(a), 12(a)

- \* Wire
- \* Audible signals
- \* Visual signals
- \* Messenger

3-34 - e. Night attack control measures are usually more restrictive than those used during daylight. All control measures for a night attack must be easily identifiable on the ground. The commander should impose only those measures necessary to exercise control. The following control measures in planning night attacks are the minimum necessary to ensure success:

- \* Attack position.
- \* Point of departure.
- \* Direction of attack.
- \* Release points.
- \* Assault position.
- \* Probable line of deployment (PLD).
- \* Objective.
- \* Limit of advance.

Criteria: 1(a), 12(a)

Major Problem (1): FM 71-1 states "direct fire is planned as in day." (p3-38) this is in conflict with 71-2 statement.

Major Problem (12): No direct fire control measures identifies only maneuver graphics.

Minor Problem (12): control measures should be just as identifiable during the day as the night.

3-34 - g. Fire support considerations are as follows.

(1) Direct fire. Units must remain aware of adjacent unit positions, as the potential for fratricide increases during limited visibility. Detailed and precise fire control measures must be established and understood, especially all signals for lifting and shifting supporting fires.

Criteria: 1(s), 6(s), 12(q), 18(s), 21(s), 22(s), 23(a)

Minor Problem(1): Fratricide is a problem in the day as well as the night. Day should have the same considerations.

### 3-35 3-17 BYPASS PLANNING CONSIDERATIONS

3-35 - b. One or both of the following bypass techniques may be employed:

- \* Avoid the enemy and bypass.
- \* Fix the enemy by fire and bypass.

Criteria: 1(a), 3(a)

### 3-37 3-18 ASSAULTS AND ACTIONS ON THE OBJECTIVE

3-37 - The assault is the overrunning and seizing of an occupied enemy position. The goal of any assault is to destroy the enemy as rapidly as possible with minimum friendly casualties, while physically overrunning or occupying the position.

Criteria: 1(a), 13

Minor Problem (1): definition of assault in FM 101-5-1 is "1. The culmination of an attack which closes with the enemy... (p1-6) The aspect and seizing/destroying is not addressed.

Minor Problem (1): FM 71-1 does not specifically state that the assaulting unit "must physically overrun or occupy the position." (p3-26)

Major Problem (13) Discrepancies with lower level manuals.

3-37 - a. Considerations.

(2) In any assault, the objective must first be isolated by direct and indirect fires.

(3) The unit making the assault is the task force's main effort.

Criteria: 1(a), 3(a), 18

Major Problem (1,12,13): Neither 71-2, or 1 discuss fire control aspects during the assault on the objective.

### 3-38 3-19 CONSOLIDATION AND REORGANIZATION

3-38.9- (4) Plan fires. Once in position, company commanders and platoon leaders verify task force TRPs and designate sectors of fire to control direct fires...

Criteria: 1(s), 12(s)  
Major Problem (1): Fire plans during this phase should be the same degree as for a defense. (FM 71-1 does not address this aspect either.)

Minor Problem (12,21): FM 71-1 (p3-27) "consolidation on the obj" does not discuss verification of TF TRP's.

### 3-39 3-20 OFFENSIVE CONTROL MEASURES

Criteria: 12(s), 15(s)

3-39 -Control measures are used with specific missions to subordinate units to define the scheme of maneuver. Sufficient control measures are used to coordinate the efforts of the task force and to allow the task force commander to rapidly give FRAGOs to change the plan during the attack. Normally, the least restrictive measures possible are used...

#### 3-39 - a. Objective

Criteria: 12(a)

- (1) The task force commander assigns terrain objects if the task force mission is to seize or secure a terrain feature. If the task force mission is destruction of an enemy force, he assigns objectives for orientation and control...

Minor Problem (12,13): FM 71-2 discussion of "atk of a strong pt" (p3-59) uses "obj" as a control measure for direct fire systems. This definition does not specify or allude to this point. (neither does FM 101-5-1)

- (2) The task force commander may assign intermediate objectives to be taken when a piece of terrain is critical to the scheme of maneuver.

Minor Problem (12,13): FM 101-5-1 defines objective as "The physical object of the action taken (for example, a definite terrain feature, the seizure and/or holding of which is essential to the commander's plan, or the destruction of an enemy force w/o regard to terrain features.)... Definitions conflict especially if there is a destruction of enemy objective. (p1-50)

- (3) Objectives should be on easily identified terrain features and should facilitate consolidation, reorganization, and continuation of the mission.

Minor Problem (12,13): Def discrepancy, FM 17-15 defines the objective is the physical object or area to be seized or taken. It may be enemy personnel, terrain or a manmade object, or some other goal (2-11)

3-40 - b. Zone of Action...(3) He is free to maneuver his units and to fire within the zone.

Criteria: 12(a)

3-40 - c. Axis of Advance. An axis of advance is used to indicate the general direction of movement of a unit. Commanders must ensure that deviation from the assigned axis of advance does not interfere with the movement or fires of adjacent units. When more than one axis of advance is used, one is designated as the main attack.

Criteria: 12(a)

Minor Problem(12): Def in 101-5-1 for axis of adv: "A general route assigned for purposes of control, which extends toward the enemy. An axis of advance symbol graphically portrays a commander's intention, such as avoidance of built-up areas or envelopment of an enemy force. It follows terrain suitable for the size of the force assigned the axis and is often a road, a group of roads, or a designated

series of locations. A cdr may maneuver his forces and supporting fires to either side of an axis of adv provided the unit remains oriented on the axis and the objective. Deviations from an assigned axis of adv must not interfere with the maneuver of adj units without prior approval of the higher cdr. Enemy forces that do not threaten security or jeopardize mission accomplishment may be bypassed. An axis of adv is not used to direct the control of terrain or the clearance of enemy forces from specific locations. Intermediate objs normally are assigned for these purposes. (see direction of attack) (p1-8)

Minor Problem (12): Def discrepancy, FM 17-15 definition is not the same as FM 101-5-1 or FM 71-2 (p2-8)

3-45.1- d. Direction of Attack. A direction of attack is a restrictive control measure used when the task force commander needs to designate a specific direction of attack or to tightly control a plan of attack. A unit must employ the bulk of its combat power along the assigned direction of attack. The unit cannot deviate from it except to maneuver against enemy forces interfering with the advance. A direction of attack-

\* Follows well-defined terrain features such as trails.

\* Is used principally in night attacks and counterattacks.

Criteria: 12(a)

Minor Problem (12): Definition discrepancy, FM 101-5-1: A specific direction or route that the main attack or the main body of the force will follow. If used, it is normally at bn and lower levels. Direction of attack is a more restrictive control measure than axis of adv, and units are not free to maneuver off the assigned route. It usually is associated with infantry units conducting night attacks or units involved in limited visibility operations and in counterattacks. (p1-25)

Minor Problem (12): Def. discrepancy, FM 17-15: "This is the term for the specific route a force will follow. It is used mainly during periods of limited visibility. (p2-10)

3-41 - e. Line of Departure. No direct fire comment.

Criteria: 12(a)

3-41 - f. Attack Positions. No direct fire comment.

Criteria: 12(a)

3-41 - g. Assault Position. No direct fire comment.

Criteria: 12(a)

3-41 - h. Final Coordination Line. The FCL is a line close to the enemy position used to coordinate the lifting and shifting of supporting fires with the final deployment of the task force. It should be recognizable on the ground. It is not a fire support coordination measure.

Criteria: 12(u), 16(u), 18(u)

3-41 - i. Phase Line. A phase line extends across the zone of action of the task force. Phase lines are established to control and coordinate maneuver, to coordinate fires with maneuver, and to assist in executing contingency plans.

Criteria: 12(u)

Minor Problem (12): Def discrepancy FM 101-5-1: A line used for control and coordination of military operations. It is usually a recognizable terrain feature extending across the zone of action. Units normally report crossing PLs, but do not halt unless specifically directed. PLs often are used to prescribe the timing of delay operations. (p1-55)



3-41 - j. Overwatch Position. Overwatch positions are usually indicated graphically as checkpoints.

Minor Problem (12): Def discrepancy FM 7-7J (pC-7): "A phase line is a linear control measure normally used to control movement. It can also be used to control and distribute the fire..."

Criteria: 6(a), 12(s)

3-41 - k. Attack-by-Fire Position. An attack-by-fire position is used to designate the position from which direct fires are placed on an objective or into an engagement area.

Minor Problem (12): Def discrepancy, FM 101-5-1: 1. A tactical technique in which one element is positioned to support the movement of another element with immediate direct fire. 2. The tactical role of an element positioned to support the movement of another element with immediate fire. (p1-54)

Criteria: 6(s), 12(s), 13(s), 14(a)

Minor Problem (12): Not defined in FM 101-5-1 or any other manual.

Minor Problem (12): Not defined in FM 71-1.

3-41 - l. Infiltration Lane. No direct fire comments

Criteria: NA

3-41 - m. Limit of Advance. The limit of advance is the control measure used to stop the forward progress of attacking units; it does not restrict fires.

Criteria: 12(a)

Minor Problem (12): Def discrepancy, FM 101-5-1 & FM 17-15: An easily recognized terrain feature beyond which attacking elements will not advance. (p.1-42)

3-42 - n. Checkpoints. Checkpoints provide the commander the capability of rapidly shifting fires and reorienting maneuver forces by using recognizable terrain features.

Criteria: 12(s), 16(s)

Minor Problem (12): Def discrepancy, FM 101-5-1: A predetermined point on the ground used as a means of coordinating friendly movement. Checkpoints are not used as reference points in reporting enemy locations. (p1-13)

Minor Problem (12): Def discrepancy, FM 17-15: "This is a designated easily identifiable point used to control friendly movement."

Criteria: 12(s), 16(s)

3-42 - o. Techniques for Fire Control While Moving. Direct fires may be controlled on the move by marking a target with white phosphorus (WP) or tracers, and using it as a hasty TRP. Another expedient method to control fires is to use the clock system, with 12 o'clock being the general direction of advance.

#### 3-42 SECTION IV. CONDUCTING ATTACKS

##### 3-42 3-21 MOVEMENT TO CONTACT

Criteria: NA

This study is limited to the analysis of deliberate attacks only. Therefore I did not do a specific analysis of this portion.

8-2-8-19

3-48 3-22 MEETING ENGAGEMENT AND ACTIONS ON CONTACT Criteria: NA

This study is limited to the analysis of deliberate attacks only. Therefore I did not do a specific analysis of this portion.

3-49 3-23 HASTY ATTACK Criteria: NA

This study is limited to the analysis of deliberate attacks only. Therefore I did not do a specific analysis of this portion.

3-52 3-24 DELIBERATE ATTACK Criteria: 1(a), 3(a)

3-52 - a. Task force deliberate attacks differ from the hasty attack in that they are characterized by precise planning based on detailed information, thorough preparation, and rehearsals. Deliberate attacks normally include large volumes of supporting fires, main and supporting attacks, and deception measures.

Major Problem (1): 100-5 discussion between deliberate and hasty attack different than discussed in 71-2.

3-53 - c...The commander should designate support, breaching and assault forces and position them in the attack formation for anticipated breaching operations. Criteria: 1(a), 3(a), 6(a)

3-53 - d. Detailed plans for fire and maneuver are completed for an area that has been reconnoitered. Planning for actions beyond the limit of reconnaissance is less restrictive, with maneuver of forces and firepower planned in broader terms to provide flexibility and allow initiative. Criteria: 1(s), 21(a)

Major Problem (1): Lack of a physical recon should not limit planning and the assignment of control measures.

3-53,4- e. ...The commander and staff...

Criteria: 1(a), 28(a)

\* Conduct rehearsals of the fire support plan and, to the extent possible, the movement plan.

Major Problem (1,9): Fire support plan is often referenced to only indirect systems, not direct fires.

3-54 3-25 TECHNIQUES FOR THE DELIBERATE ATTACK Criteria: 1(a)

Major Problem (1): Gives TTP but only minimal discussion on direct fire.

3-54 - b. Battalion task forces penetrate enemy company defenses to isolate and destroy elements of platoon size or smaller... Criteria: 2(a)

3-54 - c. The coordinated attack is usually conducted in four phases...

Major Problem (1): These same four phases are not discussed in FM 71-1.

(1) Close on the objective. - No specific comments identified. Criteria: NA

3-54,5 - (2) Isolate the site for penetration... Criteria: 1(a), 3(a), 6(a)

1-2-B-20

(a) The commander masses overwhelming combat power at the point of initial penetration...

(c) Overwatch is positioned where direct fire weapons can support the assault and prevent enemy reinforcement.

3-55 - (3) Breach or penetrate to gain a foothold.

Criteria: 1(a), 3(a)

(c) The infantry uses breaching and assault techniques similar to those used in the assault of a complex obstacle, and will reduce trench lines, bunkers, fortified positions, and the antitank weapons in them.

3-55 - (4) Exploit the penetration.

Criteria: 1(a), 3(s), 6(a)

(a) Tanks will frequently follow the dismount elements and support from close overwatch...

(b) Bradleys use the long-range stabilized fire of the 25-mm gun and TOW to provide effective overwatch fires...

3-56 - d. The battalion task force must integrate and coordinate combat, combat support, and combat service support to capitalize on them as combat multipliers.

Criteria: 1(a)

(1) Maneuver...

(a) Main attack. - No specific comments identified.

(b) Supporting attack. The mission of the supporting attack is to fix or suppress an enemy force not being directly assaulted by the main attack. The supporting attack accomplishes its mission by emphasizing fire rather than maneuver. The fires of the supporting attack must be combined with indirect fires to achieve the maximum effectiveness.

Criteria: 1(a), 3(s)

(c) Reserve. - No specific comments identified.

(d) Scout platoon...the primary mission of the platoon is recon missions to gather intel on enemy defensive locations, orientation, and dispositions...During the attack, the scout pl't's mission is to report enemy repositioning and counterattack...

Criteria: 1(a), 4(a)

(e) Antiarmor company. Antitank elements are normally positioned to provide overwatch and support-by-fire onto the obj and potential enemy counterattack routes.

Criteria: 1(a), 6(s)

3-56 (2) Fire Support. - No specific comments identified. Criteria: 1

(a) Field artillery...

(b) Mortars...

Major Problem (1): No discussion of direct fire support only indirect fires.

3-57 (c) Air Force...The deliberate attack planning process requires detailed planning, integration, and coordination of CAS with the bn tl scheme of maneuver. Tank and artillery positions are the priorities of CAS in the deliberate attack.

3-57 (3) Air defense artillery. - No specific comments identified. Criteria: 19

Major Problem (1,19): No discussion of direct fire role or integration.

**3-58 3-26 ATTACK OF A STRONGPOINT**

3-58 - ...There are four steps in the process of destroying an enemy strongpoint: ... Criteria: 1(a)

Major Problem (1): FM 71-1 (p3-40), does not list or discuss these four steps.

Major Problem (1,12): FM 71-1's discussion of Assaultology of a strongpoint does not discuss direct fire control measures or necessity for a direct fire plan. (p3-40)

Major Problem (1): FM 17-15 does not discuss the same steps and it doesn't assign the same mission for the tanks (eg. not in assault force) (p3-37)

3-58 - a. Reconnoiter and task-organize. - No specific comments identified.

Criteria: 1, 4

Major Problem (1,4): Internal manual problem, on p3-53 it states direct fire planning considerations should be based on recon. However, attack of a strongpoint has no specific discussion.

3-59 - b. Isolate the point of penetration...This position must be isolated by intense direct and indirect fires and smoke to destroy enemy positions and to prevent lateral movement to reinforce this pl. Units attack by fire against assigned objectives or at the direction of a single individual such as the task force S3...

Criteria: 1(s), 3(s), 12(s)

3-59.60- c. Breach and penetrate...

Criteria: 1(s), 3(s)

3-60 - (1) Tanks and BVP's support by fire...

3-60 - (2) If sufficient obstacle lanes have been cleared, tanks follow and support the dismount elements by fire...

3-60 - (3) BVP's initially support by fire and are called forward when the antiarmor defenses are destroyed...

3-60 - (5) ...Mutual support between attacking elements is maintained so that they are not isolated and defeated...

3-60 - (6) Overwhelming suppressive fire and smoke is planned to hide and protect assault breaching efforts...

3-60.1- d. Exploit the Penetration...The assault force passes rapidly through the breach, supported by the fires of the support force and the breach force...In planning the assault, consider the following points:

Criteria: 1(s), 3(s)

- (2)...BFV's support by fire while the tanks and dismounted infantry complete the reduction of the strongpoint and associated trench lines.

3-62 SECTION V. OTHER OFFENSIVE OPERATIONS Criteria: NA

This study is limited to the analysis of deliberate attacks only. Therefore I did not do a specific analysis of this portion.

3-62 3-27 EXPLOITATION Criteria: NA

This study is limited to the analysis of deliberate attacks only. Therefore I did not do a specific analysis of this portion.

3-63 3-28 PURSUIT Criteria: NA

This study is limited to the analysis of deliberate attacks only. Therefore I did not do a specific analysis of this portion.

3-64 3-29 RECONNAISSANCE IN FORCE Criteria: NA

This study is limited to the analysis of deliberate attacks only. Therefore I did not do a specific analysis of this portion.

3-64 3-30 ATTACKS FROM A DEFENSIVE POSTURE Criteria: NA

This study is limited to the analysis of deliberate attacks only. Therefore I did not do a specific analysis of this portion.

3-66 3-31 FOLLOW-AND-SUPPORT Criteria: NA

This study is limited to the analysis of deliberate attacks only. Therefore I did not do a specific analysis of this portion.

3-67 3-32 RAID Criteria: NA

This study is limited to the analysis of deliberate attacks only. Therefore I did not do a specific analysis of this portion.

3-69 3-33 FEINT Criteria: NA

This study is limited to the analysis of deliberate attacks only. Therefore I did not do a specific analysis of this portion.

3-69 3-34 DEMONSTRATION

Criteria: NA

This study is limited to the analysis of deliberate attacks only. Therefore I did not do a specific analysis of this portion.

CHAPTER 6  
COMBAT SUPPORT

6-24 SECTION V. AIR DEFENSE SUPPORT

6-24 - b. Active Measures. Air defense for the task force is provided by its organic individual and crew-served weapons, and by nonorganic supporting air defense artillery units. The firepower of the task force's machine guns, 25mm guns, and small arms massed against an attacking aircraft is a formidable air defense system. TWO's and tank main guns can also be used against slow moving helicopters. Use of small arms against attacking aircraft is described in FM 44-8.

Criteria: 1(s), 19(s)

Major Problem (1,19): FM 71-1 does not discuss the use of direct fire system to support the air defense battle. (p6-44)

6-26 - 6-19. Weapons Control.

Criteria: 1(s), 12(s), 19(s)

a. Air defense rules of engagement are directives that specify the circumstances under which an aircraft can be engaged. Weapons control status is established by higher headquarters. Stinger crew leaders and Vulcan squad leaders are responsible for deciding whether an aircraft is hostile or friendly. Weapons control status describes the relative degree of control exercised over air defense weapons:

Major Problem (19): Units and writings do not highlight that weapons control should apply to all active air defense and direct fire systems. FM 101-5-1 defines "active air defense"...It includes such measures as the use of aircraft, interceptor missiles, air def artillery, non-air def weapons in an air def role, and counter-countermeasures.

\* Weapons Free. May fire at any aircraft not positively identified as friendly (least restrictive).

\* Weapons I. May fire only at aircraft positively identified as hostile.

Minor Problem (12,19): Def discrepancy, FM 101-5-1 def: "Weapons may be fired only at aircraft positively identified as hostile according to the prevailing hostile criteria. (p1-2)

\* Weapons Held. Do not fire except in self-defense or in response to a formal order (most restrictive).

Major Problem (12, 19): Def discrepancy, FM 101-5-1 def: "Weapons may not be fired except in self-defense." (p1-2)

6-26 b. ...The task force commander has the authority to impose a more strict weapons control status that dictated by higher headquarters; however, he may not go to a less restrictive status.

6-27 - 6-21. Employment Considerations

Criteria: 1(a), 3(a), 19(a)

6-28 - d. The task force's employment of ADA support is based on the commander's air defense priorities. These are developed with the assistance of the ADA officer. These priorities change during the course of an operation. At task force level, priorities are based upon an analysis of criticality to mission accomplishment, vulnerability and threat.

**General Comments Involving Criteria/Problems in Other Manuals**

**FM 71-1** (Criteria not included in summary sheet for overall TF rating purposes but is included in general comments Chapter 2 Review of literature)

- |  |                                      |
|--|--------------------------------------|
| 1. "[direct fire] results can be summed up in 3 words: Destroy, Neutralize, and Suppress." (p2-34)   | Criteria: 2(s)                       |
| 2. ID two type targets (point and area) (p2-34)  | Criteria: 1(s),9(s)                  |
| 3. ID techniques of fire (p2-36)   | Criteria: 1(s),7(s)                  |
| 4. ID Engagement priority (p2-38)  | Criteria: 1(s),5(s)                  |
| 5. ID's 3 fire patterns- frontal,depth, and cross (p2-38)  | Criteria: 1(s),8(s)                  |
| 6. Discusses the necessity of establishing "restrictive fire control graphics" to prevent fratricide. (p2-39 & p3-13)                              | Criteria: 1(s),18(s)                 |
| 7. Specifically addresses the following direct fire criteria, but not necessarily in the offense. (Note: comments not listed only page references) | Criteria: 1,12,20,23,28(s) (p3-37-9) |

**FM 17-15:** (Criteria not included in summary sheet for overall TF rating purposes but is included in general comments Chapter 2 Review of literature)

- |   |  |
|---|--|
| Specifically addresses the following direct fire criteria, but not necessarily in the offense. (Note: comments not listed only page references) | Criteria: 1(s) (p3-5) Specifically addresses necessity for an offensive fire plan, however, it "should be given...orally" only. (p3-5)                     |
|   | Criteria: 5(s) (p2-40)   |
|   | Criteria: 7(s) (p2-41)   |
|   | Criteria: 12(s) (p2-40 and numerous others)  |
|   | Minor Problem (12): FM 17-15 gives extensive discussion of different types of combat control measures but fails to specifically apply them to direct fire. |
|   | Criteria: 16(s) (p3-21) (Discusses it as a drill)  |
|   | Criteria: 26(s) (p2-4)   |
|   | Criteria: 27 (p2-4)  |

**FM 7-73:** (Criteria not included in summary sheet for overall TF rating purposes but is included in general comments Chapter 2 Review of literature)

- |   |  |
|---|--|
| Specifically addresses the following direct fire criteria, but not necessarily in the offense. (Note: comments not listed only page references) | Criteria: 1(s) (pC-15)   |
|   | Criteria: 6(s) (p5-22 and others)  |
|   | Criteria: 7(s) (pC-14) (Instead of techniques it calls it "methods. Criteria |
|   | Criteria: 8(s) (p2-8,11)   |
|   | Criteria: 12(s) (p2-21, C-1, and others)                                     |
|   | Criteria: 17(s) (pC-15)  |
|   | Criteria: 19(s) (app F)  |
|   | Criteria: 21(s) (p5-13)  |
|   | Criteria: 28 (p3-6)  |

**Discrepancies between FM 71-1, FM 17-15 and FM 7-7J:**

1. Major Problem (1): FM 71-1, FM 17-15 and FM 7-7J discrepancy. 71-1 lists 6 basic rules for controlling fires. (p3-33). FM 17-15 discussion does not include these same steps. (p3-40) FM 7-7 lists 7 "principles" of fire control and distribution. (pC-2)
2. Major Problem (1): FM 71-1 and FM 17-15 discrepancy. 71-1 describes the "assault as over running and seizing of an occupied enemy position." (p3-26) FM 17-15 describe the assault force mission as "to close with and destroy" (p3-28)
3. Major Problem (1,12,20,24): FM 17-15 and FM 7-7J Platoon Fire Plan discrepancies include:  
(Note: Only discusses in def chapters. p4-17,18 FM 17-15 and p6-11,12)
  - a. Different legend requirements
  - b. Different sector of fire requirements
  - c. Different weapons designation and information requirements
  - d. Different quantity preparation and distribution requirements
  - e. Diagram discrepancies between manuals
  - f. Diagram internal discrepancies between what is written and what the diagram illustrates

This lack of continuity between doctrinal manuals make it impossible to make a consolidated fire plan at the Co/Tn level.

4. Minor Problem (12): FM 7-7J uses the terms "Close overwatch" and "long overwatch." These terms are not defined in any manual including FM 7-7J. They are not used in FM 71-2, FM 71-1, or FM 17-15. (p6-8 and others)



Appendix B-3-A

TRAINING DOCTRINE  
ANALYSIS AND RATING SUMMARY

Criteria	A	B	C	D	E	F	G
1. DIRECT FIRE PLANNING	1	22	11	4	1	13	10
2. COMMANDERS GUIDANCE:	1	5	3	2	1	2	0
3. - INTENT (TYPE FIRES + PURPOSE)	1	4	1	3	2	0	0
4. - IDENTIFIES DIRECT FIRE R&S. PRIORITY (PIR/IR)	1	7	6	1	1	1	2
5. - IDENTIFIES ENGAGEMENT PRIORITY	0	0	0	0	0	0	0
6. - IDENTIFIES WEAPON'S POSITION/ INTEGRATION	2	6	2	4	0	0	1
7. - IDENTIFIES TECHNIQUES OF FIRES	0	0	0	0	0	0	0
8. - IDENTIFIES FIRE PATTERNS	0	0	0	0	0	0	0
9. - DESIGNATES DIRECT FIRE REHEARSAL TYPE/TIMES	0	0	0	0	0	0	0
10. - DESIGNATES WEAPONS MAINTENANCE PRIORITY	0	0	0	0	0	0	0
11. - DESIGNATES CRITICAL CONTROL MEASURES	1	1	0	1	1	1	0
12. CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC):	1	12	5	6	2	4	5
13. - ESTABLISHED FOR ACTIONS ON THE OBJECTIVE	1	3	1	2	1	1	0
14. - ESTABLISHED FOR MOVEMENT PHASE	1	2	2	0	0	0	0
15. - ESTABLISHED IN ADEQUATE QUANTITY	0	0	0	0	0	0	0
16. - EASILY IDENTIFIABLE	0	0	0	0	0	0	0
17. - FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION	1	1	0	1	1	1	0
18. - DESIGNATED TO PREVENT FRATRICIDE	2	3	1	2	0	0	0
19. - ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL	1	5	3	2	0	2	0
20. DIRECT FIRE PREPARATION	2	7	4	3	0	0	0
21. - DIRECT FIRE PLAN/CONTROL MEASURES:	0	1	0	0	0	0	0
22. * DISSEMINATED	1	1	0	0	0	1	0
23. * UNDERSTOOD	1	1	0	0	0	1	1
24. - COMPANY/PLATOON/SECTION/SQUAD FIRE PLANS PREPARED	2	1	0	1	0	0	0
25. - INDIVIDUAL WEAPON'S RANGE/ SKETCH CARDS PREPARED	0	0	0	0	0	0	0

<u>Criteria</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>
26. - PREPARATION FOR COMBAT CHECKS	2	3	2	1	0	0	0
27. - PREPARATION FOR FIRE CHECKS	0	0	0	0	0	0	0
28. - DIRECT FIRE REHEARSALS CONDUCTED	1	2	2	0	0	1	1
29. - SUPERVISION	2	3	3	0	0	0	0

-----  
**KEY:**

**A. Overall Rating (0-3):**

- 0 - Not Addressed
- 1 - Problems
- 2 - Adequate
- 3 - Optimal

**B. Total number of references to criteria.**

**C. Number of references that alluded to criteria but did not specifically address it in terms of offensive direct fire operations:**

**D. Number of references that specifically addressed criteria during offensive direct fire operations.**

**E. Total number identified as optimal.**

**F. Total number of identified major problems.**

**G. Total number of identified minor problems.**

**Comments (if applicable):**

## Appendix B-3-B

1. I reviewed the following mission training plan (MTP) tasks for condition, task standard, planning and preparation

1  
subtasks:

<u>Maneuver Tasks</u>	<u>Number</u>
Move Tactically	#7-1-3004
Assault	#7-1-3007
Attack/Counterattack by Fire	#7-1-3008
Infiltrate	#7-1-3019
Reorganize	#7-1-3022
Consolidate	#7-1-3023
Breach Defended Obstacles	#7-1-3027

### Command and Control

Command and Control the Battalion Task Force	#7-1-3901
Perform S3 Operations	#7-1-3902
Command Group Operations	#7-1-3903

### Intelligence

Perform Intelligence Operations	#7-1-3905
---------------------------------	-----------

### Fire Support

Employ Fire Support	#7-1-3907
---------------------	-----------

### Air Defense

Perform Air Defense Operations	#7-1-3911
--------------------------------	-----------

\* Leader Task  
+ Critical Task

1

I confined my review to these tasks based on the papers limitation. (Deliberate Attack)

**TASK: MOVE TACTICALLY (7-1-3004(p5-16))**

- (a) -- Alluded too
- (b) -- Specifically addressed

**CONDITION:**

...axis or zone has been assigned... An LD and LD time may be given... enemy is performing security operations in an HRP(+) strength... Use of scouts ahead of LD time is allowed...

Criteria: 12(a)

**TASK STANDARDS:**

b. The TF locates and reports all enemy platoons, directed PIR, other intelligence requirements/tasks, or other critical information on the enemy and terrain in its zone or along its axis.

Criteria: 4(a)

**SUBTASKS AND STANDARDS:**

\*1. TF commander plans and gives the OPORD for tactical movement.

Criteria: 1(a), 6(a), 12(a), 14(a), 19(a)

c. If multiple routes are selected, they provide for mutual support between columns--for example, one element can quickly move to assist the other by fire or maneuver.

d. TF elements are designated to provide forward, flank, and rear security...

Major Problem (1,14): There is no requirement to conduct direct fire planning during movement. (Note: also no requirement for intel collection during movement as it does for the assault.

f. Formation and order of march are designated.

g. Danger areas are designated (areas of increased exposure or restriction), and contingencies are designated or planned for likely danger areas or locations where lead elements must switch (formations change).

Minor Problem (1): (ref f.) Why are movement techniques not designated?

h. Sufficient control and coordination measures are designated to facilitate reporting and FRAGOs.

i. ADA is positioned forward for security and for covering movement across exposed areas.

\*5. TF minimizes exposure.

Criteria: 19(a)

a. ADA weapons are positioned to keep all TF elements in open areas under ADA coverage.

**TASK: ASSAULT (7-1-3007 (p5-27))**

**CONDITION:**

The TF encounters an enemy HRC(+) in a hasty defense (only a limited number of surface laid mines, no prepared vehicle fighting positions, only hasty individual positions for the infantry and lack of tie-in with adjacent companies) or moving HRC...

Criteria: 1(a)

Major Problem (1): Why is this task only against a "hasty defense." Why not a prepared defense too. Upon further review. (ref. summary p5-6 friendly/OPFOR tasks) There are no HTP tasks that require a unit to a attack/assault a "prepared" defensive position. There is also no requirement to assault under MOUT conditions.

**TASK STANDARDS:**

a. The TF destroys, captures or forces the withdrawal of 100 percent of the enemy combat vehicles and infantry on the objective.

# **SUBTASKS AND STANDARDS:**

## **\*1. TF Scouts detect enemy...**

a. Enemy location, activities, composition and size along with any other needed information (presence of obstacles, fortifications) are accurately reported to the TF commander.

Criteria: 4(a)

Minor Problem(4): Task 3905 32 operations, establishes a 70% success requirement for intel collection. Shouldn't the scouts have a similar requirement?

## **\*2. TF develops the enemy situation.**

a. Info is gained to plan an attack against enemy weakness. Locations of enemy and natural obstacles, enemy antiarmor weapons, fire sacks, plt positions, and flanks are included along with possible routes, overwatch positions, and support-by-fire positions for use by friendly forces.

Criteria: 1(a), 4(a), 6(a), 13(a), 14(a).

Optimal(1): Good discussion but not discussed in FM 71-2.

## **\*3. TF commander develops and communicates a FRAGO for the attack.**

- a. Plan provides for destroying the enemy.
- b. TF uses fire and maneuver to fix the enemy. Then it maneuvers against a point of existing or created weakness.
- c. Direct and indirect fires are planned to fix and isolate the enemy's antitank weapons.
- d. TF concentrates the attack against no more than a defending platoon or moving company and isolates the point of attack.
- e. TF assigns a specific mission to each maneuver company team (overwatch or support-by-fire positions with sectors of fire or terrain objectives).
- f. Control measures coordinate maneuver with direct and indirect fires.

Criteria: 1(a), 2(s), 12(s)

Minor Problem (1): Definition discrepancy, is the correct use of the term "Fire in Movement" instead of "Fire and Maneuver." By definition fire is included in maneuver. (p1-44)

Minor Problem (12): Definition discrepancy, what is the difference between "overwatch," "support-by-fire," "attack-by-fire," "base-of-fire?" Only overwatch and base-of-fire are defined in FM 101-5-1.

## **4. TF prepares for the assault.**

b. Plan is disseminated to all elements, and all leaders are oriented on terrain and missions.

Criteria: 20(a), 22(a)

Minor Problem (23): Does dissemination mean understanding? Maybe statement should read "Plan is disseminated and understood by all elements..."

## **5. TF fixes the enemy.**

a. Direct and indirect fires fix and isolate the enemy, deceive him as to the location of the main effort and prevent him from improving his positions, withdrawing, maneuvering against the TF or engaging the maneuver force.

Criteria: 1(s)

Optimal (1): Good discussion but not full TTP.

Minor Problem (1): "Deception Fires" is a good concept but I haven't seen it defined or addressed in FM 71-2 or any other maneuver manual.

## **\*6. TF assaults.**

a. Assault is synchronized. (The actions of maneuver and fires are mutually supporting to prevent a piecemeal attack.) (ARTEP 71-1-BTP)

Comment: How do you measure this task? Is the attack is successful but it is not synchronized do they fail? I think you need specific subtasks to measure this task. For example, was the D57/IPB not synchronized with the the indirect and direct fire plans. Units need to know why they failed so they can fix their training.

**TASK:** ATTACK/counterattack by fire #7-1-3008 (p5-30)

**CONDITION:** The TF is ordered to move to a BP and perform an attack by fire as a supporting or fixing attack or counterattack by fire. It is assigned either a BP and sector of fire/engagement area or an axis of advance and objective but the intent is not to close with and overrun the enemy position. The enemy may be stationary or moving. A stationary enemy can be from a NHC(+) to HRB(+)... A moving enemy can be from an HRB(+) to HRB(+) in march or prebattle formation with little forward recon...The intent for the TF is for destruction, suppression, fixing or deception.

Criteria: 1, 3(s)

**Major Problem(1):** For training purposes what posture is the "stationary enemy," hasty or prepared def or just sitting? OPFOR task is defensive operations, so what level? It makes a difference.

**TASK STANDARDS:**

- a. The enemy cannot withdraw or reposition if the intent includes fixing the enemy.
- b. Where the intent is destruction of the enemy, the enemy suffers at least 75 percent casualties.
- c. The enemy cannot engage friendly forces if the intent is suppression.

Criteria: 3(s).

**Optimal (3):** Good idea to have intent for direct fire (eg. destruction, suppression, fixing) but this concept or requirement is not in FM 71-2.

**SUBTASKS AND STANDARDS:**

- \*1. TF commander plans the attack and issues an OPORD that provides- Criteria: 1(s), 2(s), 4(s), 11(s), 12(s), 13(s), 17(s)

a. Complete coverage of the enemy defense positions or avenues of approach. Sectors of fire/engagement areas are assigned to each for the company to ensure this coverage.

**Optimal (1,2,4,11,12,13,17):** Good discussion but not full TTP.

b. Control measures for massing, distributing, and shifting direct and indirect fires.

**Major Problem (1,2,4,11,12,13,17):** This detail is not discussed in assault or any other offensive task.

c. Allocation of space: BP's or zones/axis of advance to allow positioning to engage the enemy. Provision is made for the fire and maneuver normally needed to accomplish the mission.

d. Security and all-round defense; contact points or other coordination measures designated to promote tie-in between companies...

e. Instructions for preparing for the attack-by-fire. Possible preparations include recon...firing positions before the movement of the main body...

- \*2. TF prepares for the attack.

Criteria: 20(s), 24(s), 26(s)

a. Prep for movement and occupation of BP's is made. Amount of leader recon...firing positions, completion of fire plans, stacking of ammo, and other activities must be considered.

**TASK: INFILTRATE #7-1-3019 (p5-59)**

**CONDITION:** The bde directs or the TF cdr determines a need to infiltrate part or all of the TF around or through an enemy HES(+) defense...It may be performed during day or night, mounted or dismounted.

**Criteria: 1**

**Major Problem (1):** No discussion involving fire planning to facilitate breaking contact or in the event of a fight. The OPFOR does direct and indirect fire planning during most of their infiltration missions at the NTC.

**TASK STANDARD:**

- a. The TF reaches and occupies its ORP/assault position without the enemy determining the size, composition, mission, or destination of the TF.
- b. The TF infiltration force reaches ORP/assault position with 75 % of personnel/equipment NLT the time prescribed in the OPOB.
- c. The TF suffers no more than 10% casualties.

**SUBTASKS AND STANDARDS:**

- +1. TF reconnoiters to gather info.
  - a. Locates enemy security elements.
  - b. Locates gaps in the enemy's def sys

**Criteria: 4(a)**

- +2. TF cdr and staff conduct infiltration planning.
  - d. Necessary coordination measures are included (boundaries, RFLs, no-fire areas, recognition signals, markings) preclude mistaken engagement.

**Criteria: 12(a)**

**TASK: REORGANIZE #7-1-3022 (p5-66)**

**CONDITION:** The TF performs tactical operations and either gains an obj or repels an assault on a defense. The enemy is defeated. The TF sustains casualties in both personnel and equipment.

**TASK STANDARD:**

- b. Immediate resupply and cross loading of Class V items are conducted.

**Criteria: 26(a)**

**SUBTASKS AND STANDARDS:**

- +2. TF performs reorganization.
  - c. Performs immediate resupply and cross-leveling of ammo, supplies and fuel to provide minimum basic loads on all combat vehicles.
  - g. Redistributes weapon systems/personnel from elements that have lost over 50% of their combat power, which are to re-form into viable elements/units.

**Criteria: 26(a)**

**TASK: CONSOLIDATE #7-1-3023 (p5-68)**

**CONDITION:** The TF performs tactical operations and either gains an obj or repels an assault on a defense. The enemy is defeated. The TF sustains casualties in both personnel and equipment.

**TASK STANDARD:**

- a. All enemy combat vehicles and organized dismounted resistance are destroyed, captured or forced to withdraw.
- b. The TF is prepared to defeat counterattack or continue the mission one hour after starting consolidation.

Criteria: 1(s), 12(s)

Minor Problem (1,12): Pn 71-2 requires "Plan fires once in position, Co cdrs and plt ldrs verify TF TRP's and designate sectors of fire to control fires (P3-38,9)

**SUBTASKS AND STANDARDS:**

+1 TF performs consolidation.

- a. Establishes effective hasty defense to include fire control measures and orientation for each company team...

Criteria: 1(s), 12(s), 13(s)

**TASK: BREACH DEFENDED OBSTACLES #7-1-3027 (p5-68)**

**CONDITION:** The TF is ordered to breach a defended obstacle system to initiate the hdes penetration of an enemy defensive position. The area of the breach is covered by an NBC. Supporting attacks fix, but do not suppress, adjacent NBC's. The terrain does not permit bypass or wide envelopment...

**TASK STANDARD:**

- d. The TF sustains no casualties or vehicle losses due to friendly fire.

Criteria : 18(s)

**SUBTASKS AND STANDARDS:**

+1. TF performs recon of the obstacle system.

- c. TF locates vehicle positions, antiarmor weapons, and platoon positions covering the obstacles.

- e. TF locates overwatch/support-by-fire positions to support the breach...

Criteria: 4(s), 6(s)

+2. TF cdr and staff plan breach.

- a. Subordinate unit tasks are assigned to fix the enemy and to prevent shifting forces to defeat the breach effort.

- b. ADA covers the breach and passage of units through the obstacles.

Criteria: 1(s), 12(s), 19(s)

Major Problem (12): Discusses necessarily for indirect but not direct fire control measures.



d. Indirect fires/CAS and fire control measures are planned and coordinated with the S2's template to suppress enemy weapons and positions that overwatch the breach site and to obscure the enemy positions and weapons, the breach site, and the terrain between the breach and enemy positions.

+3. TF prepares for the breach.

a. Preparation actions are directed and coordinated;...and support-by-fire/overwatch positions are established.

Criteria: 6(s), 12(s), 20(s)

+4. Support force moves to an overwatch position.

a. Positions are occupied that cover likely enemy positions.  
d. Fire control measures(targets, limits of fire, TRP's and so on) are designated to each support element on the ground once they are in position.

Criteria: 6(s), 12(s), 20(s)

Minor Problem (12): Why is this not done during the planning phase instead of the execution phase?

Optimal (12): Good discussion but should be planned ahead of time too.

+5. Support force provides overwatch for the breach force.

b. Fires on suspected and known enemy locations with direct fires, preventing the enemy from fixing or stopping the breach element...

Criteria: 6(s), 12(s)

Minor Problem (6,12): This discussion appears to refer to attack or support-by-fire position instead of an overwatch position.

+9. Assault element moves through the obstacle.

a. Tanks lead through if antiarmor defenses are not effective.  
b. Infantry leads if antiarmor defenses are effective.  
c. Assault element destroys or forces the withdrawal of enemy forces and weapons that can place direct fire on the breach point(s)

Criteria: 1

Major Problem (1): FM 71-2 does not discuss this technique or consideration. (p3-68-61)

+11 TF passes following units through the obstacle system.

e. Passing unit loses no vehicles or personnel to enemy mines or TF fire.

Criteria: 18(s)

Minor Problem (1,12): No discussion on development of control measures and action to prevent this fratricide. (eg. proof breach, signals, graphic control measures)

#### OPFOR TASKS AND STANDARDS:

CONDITION: The NRC(+) is in an established defense IAW FM 100-2-1

Criteria: 1

Major Problem (1): "established defense" is not defined or discussed in FM 100-2-1 as stated. FM 100-2-1 does discuss: "two major forces of the defense are the prepared defense and hasty defense." (p6-1)

**TASK: COMMAND AND CONTROL THE BATTALION TASK FORCE**  
97-1-3901 (p5-88)

**CONDITION:** The bde issues an OPORD, warning order, or FRAGO

**TASK STANDARD:**

c. The TF controls and synchronizes subordinate and supporting elements so that it accomplishes the mission and preserves the force.

**SUBTASKS AND STANDARDS:**

\*2. TF cdr analyzes mission and gives initial guidance.

Criteria: 2(a)

a. Guidance includes restated mission, which includes bde cdr's intent for the TF and identifies all specified and implied tasks.

\*5. Staff develops an OPORD from the cdr's guidance.

Criteria: 1(a) (ref tasks 5 & 7)

Major Problem (1): As listed in task 2a, there is no requirement for cdr to give direct fire guidance. How do you make a plan with out specific guidance.

\*7. TF cdr and staff issue the OPORD/FRAGO.

Criteria: 2(a), 3(a)

d. OPORD/FRAGO contains....concept and intent for maneuver, supporting fires, and ....fire support/CSS instructions and coordinating instructions needed to synchronize the efforts of maneuver forces and CS.

Minor Problem (1): When does the wargaming process occur. FM 71-2 has wargame as part of step 3 analysis of CoA, not after the issuing of the order. (p2-18)

f. TF cdr conducts briefbacks and wargaming after the order to ensure subordinate understanding and reaction.

Minor Problem (28): FM 71-2 and tasks 3903 and 3902 use "backbrief" instead of "briefback." Neither terms are defined, is there a difference?

\*10. TF prepares, and cdr and staff conduct, supervise and monitor preparations.

Criteria: 20(a), 20(a), 20(a)

Major Problem (28): No discussion of rehearsals as directed in FM 71-2. (p2-21)

a. Cdr conducts briefbacks with subordinate cdr's, ldrs and key staff.

c. Elements make effective use of time to prepare for the operation.

\*12. TF ldrs C2 the execution.

Criteria: 1, 12

b. TF ldrs win the battle by directing the maneuver of units, controlling direct and indirect fires...Indicators are:

Major Problem (1,12): How does a cdr control direct fires?

\*13. Subordinate cdrs, ldrs and staff laterally coordinate actions during the battle.

Criteria: 1

Minor Problem (1): Never discusses what should be coordinated. For example,

\*14 TF coordinates with adjacent and supporting headquarters.

**TASK: PERFORM S3 OPERATIONS (7-1-3902 (p5-92)**

**CONDITION:** The TF performs tactical operations and receives an OPORD or FRAGO from bde.

**TASK STANDARD:**

a. The S3 section plans, coordinates, supervises, and communicates to ensure accomplishment of the mission.

Criteria: 1(a), 29(a)

**SUBTASKS AND STANDARDS:**

\*6. S3 and ADA officer plan and coordinate air defense.

Criteria: 19(a)

a. Plan provides for continuous coverage of critical vulnerable battalion elements and maximum possible passive protection of all elements to best support the mission.

b. S2, ADA officer, and FAC identify enemy air approaches.

c. S3 and ADA officer attach or assign missions to air defense elements to best cover the battalion.

Major Problem (19): No discussion of FSO & other direct fire system integration into the air defense plan. FM 71-2 specifically addresses direct fire systems integration in active measure. (p6-25)

d. S3, assisted by the air defense officer, determines and directs passive measures (covered routes, positions)

e. S3 coordinates coverage from brigade-controlled ADA assets.

f. S3 changes ADA missions and organization to meet the NETT-T factors.

g. S3 disseminates early warning of enemy air form brigade or presence of friendly air within one minute.

h. S3 passes information of enemy air to brigade within one minute.

Minor Problem (19): Why is the FAC not included in the open sentence. eg. "S3, ADA and FAC" (Note: FM 71-2 uses ALO not FAC. p6-27)

Major Problem (12,22,23): No discussion of designation, dissemination, or understanding air defense weapons control status.

\*8. S3 section develops an OPORD from the cdr guidance.

Criteria: 1(a), 2(a)

d. OPORD must contain an annotated overlay with--

... \* Concept and intent for maneuver, supporting fires, mobility, counternobility and survivability.

\* Missions/tasks for each subordinate and fire support.

e. If time is available, fully developed OPORD is issued...

Elements of a fully developed OPORD include:

... \* Fire plan prepared by the FSO

... \* Control measures that expedite synchronization, control of direct fires and maneuver and ...

\* Critical intelligence reporting and collection requirements.

Major Problem (1): No discussion of S3 section preparation of a direct fire plan.

Major Problem (1,3): No mention of these requirement in FM 71-2, or other NTP tasks. Task 3901 C2 at the Bn/TF level, lists what cdr guidance should include. (limited)

\*9. S3 section refines plans, coordinates and supervises preparation activities, and disseminates new information. Criteria: 1(a), 20(a), 21(a), 29(a)

b. Preparation actions and combat status...are currently and accurately maintained...

\*11. S3 supports the command group command, control, and coordination of the battle.

c. Coordinates with adjacent and supporting elements.

**TASK: COMMAND GROUP OPERATIONS #7-1-3902 (p5-97)**

**CONDITION:** The TF conducts tactical operations against an enemy. Changes in NETT-F require control and coordination actions.

**TASK STANDARD:**

a. The command group coordinates and directs the maneuver of combat forces, controls direct and indirect fires and coordinates other critical activities to win the battle.

**SUBTASKS AND STANDARDS:**

\*2. Command group performs backbriefs and inspections.

Criteria: 1(a), 20(a), 28(a)

a. Backbriefs with all subordinate elements to ensure complete understanding of commanders directives and intent.

Major Problem (1):

b. Inspects preparation activities of units to ensure compliance with the OPORD.

Minor Problem (1): Internal discrepancy, task 3902  
"Perform S3 operations, there is no mention of S3 backbrief and inspections"

\*4. Command group directs the maneuver and fires of combat forces.

b. TF commander controls fire and maneuver of company teams or supporting combat elements by giving FRAGOs to---

...Control direct fires on the enemy.

c. TF cdr directs changes in missions/tasks for fire support, ADA, scouts,...to respond to changes in NETT-F...

\*5. FSO coordinates the execution of fire support.

Criteria: 1

Minor Problem (1): By definition "fire support" can include  
Minor Problem (1)  
can include direct fire systems. Do you want the FSO or the command group to conduct fire support operations?

\*7. Command group performs lateral coordination with adjacent/forward battalions.

Criteria: 18(a)

**TASK: PERFORM INTELLIGENCE OPERATIONS #7-1-3906 (p6-111)**

**CONDITION:** The TF performs combat operations. The size of the Threat is regimental size in TF defensive operations and company size in TF offensive operations.

**TASK STANDARD:**

b. TF obtains all PIR/IR in the TF sector.

Criteria: 4(a)

**SUBTASKS AND STANDARDS:**

- \*1. TF commander, staff and subordinates identify intelligence requirements and plan intelligence operations.  
b. Commander and staff determine information needed for the operation.

Criteria: 4(a)

Minor Problem (4): If task requires recon to be 10% effective, why can't it also require specific direct and indirect fire control measure verification. (on enemy positions)

- \*2. TF performs reconnaissance/surveillance.  
a. TF locates 70% of enemy combat vehicle weapons systems, obstacles and dismounted platoon positions before the attack.  
d. Information needed to use terrain critical to the TF scheme of maneuver(... overwatch positions) is gathered by physical recon in advance of the start of the maneuver to allow adjustment to plans.

**TASK: EMPLOY FIRE SUPPORT 87-1-3907 (p6-116)**

Criteria: 1(a)

**CONDITION:** The TF has priority of fires from a BS FA battalion and has been given CAS sorties for planning purposes. TF mortars have been incorporated into the plan. Immediate or additional sorties are available upon requires.

Major Problem (1): Definition for fire support includes the employment of direct fire systems. (p1-32, FM 101-5-1) This task only addresses it in terms of indirect fires.

Comment: This task includes many subtasks that could be applied to the employment of direct fire.

**TASK STANDARD:**

- a. All available supporting fires are executed to accomplish tasks that best support the commander's intent/concept to accomplish the mission. Available fires attack critical/vulnerable areas of enemy formations or positions.  
b. At least 80% of the missions fired suppresses/neutralizes/destroys the enemy or accomplishes the commanders intent.  
c. Friendly supporting fires do not hit friendly forces.

**SUBTASKS AND STANDARDS:**

- \*1. TF commander and staff plan combat operations.  
a. TF OPORD includes a commanders concept that clearly addresses a scheme and task/priorities for supporting fires.  
b. Plan provides a fire support matrix.  
c. Planned fires are transferred to a fire support overlay.

- \*2. FSO and staff develop a fire support plan. The commander approves it.

\* The OPORD includes a fire support plan that supports the commanders concept/intent and is synchronized with the scheme of maneuver, recon, ...

- \*3. PSS and TF leaders coordinate fire support.  
a. All TF leaders down to plt level have target lists...They know the targets they are to fire on and the criteria for initiating those fires.

- +4. TF executes fire support.
  - a. Friendly fires stop or slow enemy movement.
  - b. Friendly fires sufficiently suppress enemy fires.
  - c. At least 90% of the missions fired suppresses/neutralizes/destroys the enemy or accomplishes the commanders intent.
  - d. Volume of fires accomplish the desired task.
  - e. Friendly supporting fires do not result in fratricide.
  - ...g. Fire support priorities and tasks are adjusted as the battle progresses.

- 5. TF executes immediate CAS.
  - ...c. TF fires and smoke suppress observed enemy air defense weapons within range.

**TASK: PERFORM AIR DEFENSE OPERATIONS (7-1-3911 (p6-140)**

**CONDITION:** The TF performs tactical operations. The enemy employs rotary-wing and fixed-wing assets against the battalion.

**TASK STANDARD:**

- a. The TF can accomplish all missions under enemy air threat and attack.

**SUBTASKS AND STANDARDS:**

- +1. TF/Co/Tn cdrs, ldrs and staff develop plans to include active and passive air defense measures commensurate with the threat.
  - a. All air avenues of approach are identified and disseminated.
  - c. TF cdr plans ADA weapon employment...and positioning. ADA officer recommends how to provide coverage for priority TF assets...

Criteria: 1(a), 19(s)

Major Problem (1,19): No subtasks require the integration of other direct fire systems. By definition active air defense "...includes such measures as the use of...air defense artillery, non-air defense weapons in an air defense role, and counter-countermeasures." (FM 101-5-1, pl-1) FM 71-2 states active measures [are provided] by its organic individual and crew-served weapons and by nonorganic supporting air defense artillery units... (p6-25)

- +2. TF staff and leaders disseminate enemy air approaches, air defense status, and weapons control status.
  - \* All crews/squads know enemy air avenues identified by the battalion S2/ADO, air defense warnings...and weapons control status...

Major Problem (1): ADO-S3 interface discussion is not the as outlined in task 3902, Perform S3 Operations

- +4. Air defense weapons cover the battalion elements.
  - Critical, vulnerable bn elements are continually covered by ADA weapons. Considering the following:
    - ...\* Commanders priorities.

Appendix B-4-A

STANDARD OPERATING PROCEDURES (SOP'S)  
ANALYSIS AND RATING SUMMARY

Criteria	A	B	C	D	E	F	G
1. DIRECT FIRE PLANNING	1	32	20	5	1	11	9
2. COMMANDERS GUIDANCE:	1	1	0	0	0	1	0
3. - INTENT (TYPE FIRES + PURPOSE)	0	0	0	0	0	0	0
4. - IDENTIFIES DIRECT FIRE R&S. PRIORITY (PIR/IR)	1	2	1	1	0	1	1
5. - IDENTIFIES ENGAGEMENT PRIORITY	0	0	0	0	0	0	0
6. - IDENTIFIES WEAPON'S POSITION/ INTEGRATION	1	10	3	7	2	1	0
7. - IDENTIFIES TECHNIQUES OF FIRES	0	0	0	0	0	0	0
8. - IDENTIFIES FIRE PATTERNS	0	0	0	0	0	0	0
9. - DESIGNATES DIRECT FIRE REHEARSAL TYPE/TIMES	2	3	1	2	1	0	0
10. - DESIGNATES WEAPONS MAINTENANCE PRIORITY	2	2	0	2	0	0	2
11. - DESIGNATES CRITICAL CONTROL MEASURES	0	0	0	0	0	0	0
12. CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC):	1	27	17	10	2	5	6
13. - ESTABLISHED FOR ACTIONS ON THE OBJECTIVE	2	11	4	7	1	0	0
14. - ESTABLISHED FOR MOVEMENT PHASE	2	7	7	0	0	0	0
15. - ESTABLISHED IN ADEQUATE QUANTITY	*1	1	1	0	0	0	0
16. - EASILY IDENTIFIABLE	2	1	0	1	0	0	0
17. - FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION	0	0	0	0	0	0	0
18. - DESIGNATED TO PREVENT FRATRICIDE	2	2	0	2	1	0	0
19. - ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL	1	17	12	3	5	6	0
20. DIRECT FIRE PREPARATION	1	11	10	1	0	0	0
21. - DIRECT FIRE PLAN/CONTROL MEASURES:	0	0	0	0	0	0	0
22. * DISSEMINATED	0	0	0	0	0	0	0
23. * UNDERSTOOD	*1	1	1	0	0	0	0
24. - COMPANY/PLATOON/SECTION/SQUAD FIRE PLANS PREPARED	0	0	0	0	0	0	0

<u>Criteria</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>
25. - INDIVIDUAL WEAPON'S RANGE/ SKETCH CARDS PREPARED	2	1	1	0	0	0	0
26. - PREPARATION FOR COMBAT CHECKS	2	6	3	3	1	0	0
27. - PREPARATION FOR FIRE CHECKS	0	0	0	0	0	0	0
28. - DIRECT FIRE REHEARSALS CONDUCTED	2	5	3	2	1	0	0
29. - SUPERVISION	2	6	2	4	0	0	0

-----  
Key:

A. Overall Rating (0-3)

0 - Not Addressed

1 - Problems

2 - Adequate

3 - Optimal

B. Total number of references to criteria.

C. Number of references that alluded to criteria but did not specifically address it in terms of offensive direct fire operations:

D. Number of references that specifically addressed criteria during offensive direct fire operations.

E. Total number identified as optimal.

F. Total number of identified major problems.

G. Total number of identified minor problems.

\* Subjective rating reduction due to limited discussion and lack of TTP.



Appendix: B-4-B

**SOP CRITERIA ANALYSIS**

The following SOP's were reviewed for specific or alluded to comments involving the direct fire criteria.

- (a) -- Alluded too.
- (b) -- Specifically addressed.

**Battalion SOP's:**

- a). PLSH 17-17, The Division 26 Tank Battalion/Tank Force SOP, May 1983.

I reviewed FC 17-17 first. When I reviewed the PLSH 17-17 I found it is a reprint of the FC. Therefore the comments remain the same.

- b). FC 17-17, The Division 26 Tank Battalion/Tank Force SOP, July 1983.

**SOP EXTRACT COMMENTS**

**CRITERIA/PROBLEMS/COMMENTS**

**E. Combat Orders and reports:**

- (1) Bn Cdr
- (2) Bn XO
- (3) Bn S3
- (4) Co Cdrs
- (5) Set Plt Ldr
- (6) PSO
- (7) ALO
- (8) Others as available and required.(p4)

Criteria: 19(a)

Major Problem (19): ADO is not included in orders group.

**3. Tactical operations...**

- b. Fires of tank weapons will be included...(p5)

Criteria: 1(s)

- h. Defense against air attack. (ANNEX B.)

Criteria: 19(a)

(Summary of SOP comments: discusses reaction not planning or preparation requirements, does not specifically discuss offensive considerations)(p6)

**C. COMMAND AND CONTROL (p6)**

- a. ...TIRS is used habitually:

Criteria: 12(s)

...(c) As a reference to quickly pass out control measures or issue a frag order. (p6)

- ...(e) To designate battle positions. (p6)

**ANNEX B (AIR DEFENSE)...**

Criteria: 19(a)

...(10) Plan and exercise staff supervision of battalion training in passive air defense measures and use of non-air defense weapons against hostile aircraft. (pb-3)

Major Problem (19): This only discusses training not combat requirements.

...d. Company Commanders:

...2) Supervise the employment of non-air defense weapons against attacking enemy aircraft. (pb-2)

Criteria: 19(a), 29(a)

...8. Hostile Criteria...(Summary of SOP comments: outlines hostile criteria necessary to allow fires on aircraft.)

Criteria: 18(a)

Optimal (18): This covers an area required but not addressed by doctrine.

...11. Non-air defense weapons in air defense role.

Criteria: 19(a), 29(a)

a. For non-air defense weapons, a single rule of employment applies: Absence of orders to the contrary, weapon operators engage attacking aircraft. Engagement of all other hostile aircraft will be on orders issued by unit commander and under the supervision of unit leaders.

b. Commanders will insure that their units, if attacked, seek cover, return fire and reports to next higher headquarters.

c. Training techniques for engaging aircraft are found in FM 44-8. (pb-4)

#### ANNEX C (COMMUNICATIONS-ELECTRONICS)

...6. VISUAL COMMUNICATIONS: (Summary of SOP comments: text lists different types but no reference or discussion involving direct fire control.) (pC-4)

Criteria: 12(a)

#### ANNEX D (FIRE SUPPORT)

(Summary of SOP comments: All discussion involves only indirect fire support.)

Criteria: 1

Minor Problem (1): Fails to address direct fire systems as fire support, not just artillery.

#### ANNEX F (INTELLIGENCE OPERATIONS)

...10. FIR...The following information will be routinely sought and reported to the Bn S2 when obtained...

(Summary of SOP comments: Text lists 14 different FIRs, with some specifically discussing enemy location and activity) (pF-4)

Criteria: 4(a)

Minor Problem (4): This long unchanging list would be difficult to collect. Maybe they should be intel requirements and establish FIR's based on situation and importance.

#### ANNEX B (LIMITED VISIBILITY OPERATIONS)

...5. NIGHT DEFENSIVE FIRE PLANNING.

(Summary of SOP comments: Text gives specific information involving direct fire planning and control measures but only for defensive operations)(pB-3,4)

Criteria: 1(a), 20(a)

6. NIGHT OFFENSIVE OPERATIONS.

(Summary of SOP comments: Text discusses movement but does not discuss direct fire considerations) (pB-5)

Criteria: 1

Major Problem (1): No discussion involving direct fire operations

b. COMMAND, CONTROL AND COMMUNICATION.

...The commander also plans for additional night control measures which include:

- \* Graphic control symbols that can be identified on the ground at night
- \* Light and sound signals tied to coordinated action.
- \* Identification, Friend or FOE (IFF) measures for friendly forces.

(Discussion of graphic control measures is limited to movement and not direct fire control measures) (p8-5,6)

ANNEX O (PRE-COMBAT CHECKS)

(Summary of SOP comments: Text includes an very good list of pre-combat checks, including those involving direct fire systems) (p0-1-4)

ANNEX Q (LOGISTICS)

...f. Maintenance...

... (4) ... Priority of repair and recovery will be:

- (a) Tank killer systems (TOU, Tanks).
- (b) Other combat vehicles (Inf carriers, ADA Engineer) ... (pQ-7)

ANNEX S (TACTICAL OPERATIONS CENTER (TOC) ORGANIZATION AND OPERATION)

...7. OPERATION OF THE CP...

d. Posting of Operational Maps...

... (2) As a minimum, the following symbols will be displayed on operational maps: (Summary: includes movement, position and indirect fire control measures. No specific reference to direct fire control measures.)

c. Infantry Battalion (W) TAC SOP, 1985.

SOP EXTRACT COMMENTS

ANNEX A (COMMAND AND CONTROL)

...3. Orders Group... (pA-2-2)

Annex B (Tactical Operations)

APPENDIX 2 (Fire Support Coordination)

(Summary of SOP comments: All discussion involves only indirect fire support.) (pB-2-1 thru 4)

Criteria: 12(s), 18(s)

Minor Problem(12): No discussion of graphic direct fire control measures.

Optimal(18): Specifically requires control measures to prevent fratricide.

Criteria: 26(s)

Optimal(18): Good TTP for Pre-combat check.

Criteria: 10(s)

Minor Problem(10): To allow for flexibility and cdr priorities this shouldn't be required but only "normally" be the priority.

Criteria: 12(a), 15(a)

Minor Problem(12): No specific discussion of direct fire control measures.

CRITERIA/PROBLEMS/COMMENTS

Criteria: 1, 19

Major Problem(19): Orders group does not include the ADO

Criteria: 1

Minor Problem(1): Fails to address direct fire systems as fire support, not just artillery.

APPENDIX 1 (Antitank Platoon)

Criteria: 1(s), 6(s)

...3. COMBAT OPERATIONS:

a. Offense. When not attached to a maneuver unit, sections will generally occupy overwatch positions to cover attacking forces. Sections may also be used to provide additional firepower to an exposed flank as part of a screen or guard mission.(p C-1-2)

APPENDIX 4(Air Defense)

Criteria: 1(s), 19(s), 20(s)

...3. ACTIVE MEASURES:

(Summary of SOP comments: Text specifically discusses role of non-air defense weapons in an air defense role. Includes specific comments on planning, preparation and control)

Optimal (19): Good discussion and some TTP.

d. Infantry (H) Battalion Battle Book, no date, but used during 1986 rotation.

SOP EXTRACT COMMENTS

CRITERIA/PROBLEMS/COMMENTS

(Summary) This battle book uses diagrams and text to standardize offensive and defensive operational procedures.(Note. No page numbers)

Criteria: 1(a), 6(a), 12(a), 13(a), 14(a)

Major Problem (1,12) : Diagrams use movement control measures but direct fire control measures are not shown or stipulated.

Then it discusses procedures for each MOS.

MANEUVER PROCEDURES:

Criteria: 1(a), 6(s), 20(a), 28(a)

3. Critical Tasks - Offensive Prep

...d. Rehearse critical tasks, reaction plans and transition from movement to assault

...h. Overwatch moves by successive bounds when enemy contact is expected.

e. Infantry Battalion (H) TAC SOP, 3 June 1982.

SOP EXTRACT COMMENTS

CRITERIA/PROBLEMS/COMMENTS

ANNEX E.(Fire Support)

Criteria: 1

(Summary of SOP comments: All discussion involves only indirect fire support.)(pB-1,2)

Minor Problem (1): Fails to address direct fire systems as fire support, not just artillery.

ANNEX G, (Air Defense)

...b. Hostile Criteria...(Summary of SOP comments: outlines hostile criteria necessary to allow fires on aircraft.)(pG-2)

Criteria: 19(a)

Optimal (19): This covers an area required but not addressed by doctrine. Good TTP discussion.

...c. Rules of Engagement:

Criteria: 12(a), 19(s)

...(2) Methods of control...

(3) Use of Non-Air Defense Weapons (Cal .50, 7.62 small arms):

- (a) Elements not under direct attack by hostile aircraft will fire without awaiting orders.
- (b) Engage positively identified low altitude targets.

f. Infantry Battalion (W) Battle Book, no date but used during 1966 rotation.

<u>SOP EXTRACT COMMENTS</u>	<u>CRITERIA/PROBLEMS/COMMENTS</u>
<b>PRE-COMBAT INSPECTIONS</b> (Summary of SOP comments: Text includes an very good list of pre-combat checks, but does not include those involving direct fire systems) (p1-2)	Criteria: 26(a)
<b>Flag Signals:</b> (Summary of SOP comments: Text includes flag signals for formation, battle drills and other misc. There are no signals specifically addressing direct fires)	Criteria: 12(a)
<b>LOCATION DESIGNATOR SYSTEM (LDS)</b>	
1. Purpose.	
a. The LDS is a control measure that references locations in a manner to facilitate command and control...	Criteria: 12(a)
<b>Offense</b> (Summary of SOP comments: Text focuses at the plt level and discusses the use of battle drills as the primary mode of operating during the offense. It does include discussions involving, positioning, rehearsals and C2 procedures (including visual signals). However, these drills do not discuss direct fire operations in major detail) (p61-120)	Criteria: 1(a), 12(a), 14(a), 20(a) Major Problem: Depends strictly on battle drills for offense operations.
<b>Defense</b> <b>FIRE CONTROL PLANNING, KEY PRINCIPLES (AND) FIRE CONTROL TECHNIQUES</b> (Summary of SOP comments: Text includes a discussion on direct fire planning and control fire systems that is primarily an extract of FM 71-1 discussion) (p135,137)	Criteria: 1(a), 12(a) Major Problem(1,12): Only discusses for defensive operations.
<b>FIRE SUPPORT PLANNING AND COORDINATION</b> (Summary of SOP comments: All discussion involves only indirect fire support.) (p164-168)	Criteria: 1 Minor Problem (1): Fails to address direct fire systems as fire support, not just artillery.
<b>FIGHTING POSITIONS</b> (Summary of SOP comments: Text discusses defensive weapons positioning considerations) (p200-216)	Criteria 6(a), 20(a) Major Problem (6): Only discusses position preparation for defensive operations.

g. Armer Battalion TAC SOP, 14 Aug 1989.

SOP EXTRACT COMMENTS

**ANNEX A (TROOP LEADING PROCEDURES)**

a. SUPERVISE. The commander and his staff must ensure all necessary preparations for the conduct of the ops are being made...

**ANNEX C (PRE-COMBAT CHECKS)**

(Summary of SOP comments: Text includes an very good list of pre-combat checks, but does not include those involving direct fire systems) (pC-1 thru C-4)

**ANNEX E (LIMITED VISIBILITY OPERATIONS)**

...2. Limited visibility offensive operations.  
(Summary of SOP comments: Text includes discussion on maneuver, coordination of support elements but no direct discussion on employing direct fire systems) (pE-1)

3. Command, Control and Communications.

a. The commander must plan for night control measures which include graphic control measures easily recognizable at night, light and sound signals tied to coordinated action, and identification of friendly units.

b. Target reference points (TRP's): to be published

c. The minimum graphic symbols needed for a successful night attack are an objective, rally points, probable line of deployment, line of departure, assault position, limit of advance, phase lines, direction of attack, assembly area. All of these items must be easily identified.

**ANNEX J (LOGISTICS)**

...5. Maintenance...

... (4) ... Priority of repair and recovery will be:

(a) Tank killer systems (TOW, Tanks).

(b) Other combat vehicles (Inf carriers, ADA Engineer)... (pQ-7)

**ANNEX O (AIR DEFENSE)...**

...3. Responsibilities:

a. TP Cdr will provide for proper employment of all ADA weapon systems, to include organic automatic weapons and small arms in the ADA role... (pO-1)

... (5) Plan and exercise staff supervision of battalion training in passive air defense measures and use of non-air defense weapons against hostile aircraft. (pO-2)

CRITERIA/PROBLEMS/COMMENTS

Criteria: 2, 20(a), 29(a)

Major Problem (2): TLP discussion does not include commanders guidance for any task not just direct fire.

Criteria: 20(a), 26(a)

Criteria: 1(a), 12(a)

Major Problem (1): It only discusses it for night not limited visibility operations.

Criteria: 1(a), 12(a), 16(a), 18(a)

Minor Problem (12): Control measure focus on movement not direct fire.

Criteria: 10(a)

Minor Problem (10): No flexibility for cdr if standard maint priority.

Criteria: 19(a)

Criteria: 19(a)

Major Problem (19): This only discusses training not combat requirements.

...d. Company Commanders:

...2) Supervise the employment of non-air defense weapons against attacking enemy aircraft. (p0-2)

Criteria: 19(a), 29(s)

...8. Hostile Criteria...(Summary of SOP comments: outlines hostile criteria necessary to allow fires on aircraft.) (p0-3)

Criteria: 19(s)

Optimal (19): This covers an area required but not addressed by doctrine.

#### APPENDIX 1 (ATTACK) TO ANNEX I (PLAYBOOK)

(Summary of SOP comments: Text includes playbook discussion on recon, infiltration, TF movement, attack/assault, service support. It includes graphic example that portrays obj's, PL's, RFL's, attack-by-fire and movement control measures. Movement and attack discussion does include some specific reference to direct fire operations.(pX-1,2)

Criteria: 1(a), 12(s), 13(s), 14(a)

Major Problem (1): This set piece planning fails to allow for modifications based on varying enemy situation. As shown obj's are terrain and not enemy oriented.

#### APPENDIX 3 (STRONG POINT REDUCTION) TO ANNEX I (PLAYBOOK)

(Summary of SOP comments: Text includes playbook discussion on recon, infiltration, TF movement, attack/assault, service support. It includes graphic example that portrays obj's, PL's, RFL's, obstacle drill, attack-by-fire and movement control measures. Movement and attack discussion does include some specific reference to direct fire operations.(pX-1,2)

Criteria: 1(a), 12(s), 13(s), 14(a)

h. Armer Battalion & Infantry Battalion (H), Brigade level Playbook II.

#### SOP EXTRACT COMMENTS

##### DELIBERATE ATTACK SEQUENCE (p23)

(Summary of SOP comments: Text includes playbook discussion that specifically addresses an RTC scenario. It includes graphic example that portrays obj's, PL's overwatch, and movement control measures. Movement and attack discussion does include some specific reference to direct fire operations.)

#### CRITERIA/PROBLEMS/COMMENTS

Criteria: 1(a), 8(S), 12(s), 13(s), 14(a)

Major Problem (1): This set piece planning fails to allow for modifications based on varying enemy situation. As shown obj's are terrain and not enemy oriented.

Major Problem(12): Although some graphics are shown that could be alluded to refer to direct fire employment, as illustrated they would be ineffective. For example, the play has smoke being fired in between the overwatch position and the objective. Another example, division of the objective is conducive to movement by not fires. Units would be firing into each other.

Minor Problem (1, 12): Improper graphic control symbols are used in the illustration. For example, overwatch position.

i. Armer Battalion Battlebook, date unknown.

SOP EXTRACT COMMENTS

DAY ATTACK (p2,3) AND NIGHT ATTACK (p4,5)  
(Summary of SOP comments: Text includes playbook discussion that specifically addresses an NYC scenario. It includes graphic example that portrays obj's, PL's overwatch, and movement control measures. Movement and attack discussion does include some specific reference to direct fire operations. This playbook is similar but not exactly like the previous playbook.)

CRITERIA/PROBLEMS/COMMENTS

Criteria: 1(a), 6(S), 12(s), 13(s), 14(a)

Major Problem (1): This set piece planning fails to allow for modifications based on varying enemy situation. As shown obj's are terrain and not enemy oriented.

Major Problem(12): Although some graphics are shown that could be alluded to refer to direct fire employment, as illustrated they would be ineffective. For example, the play has smoke being fired in between the overwatch position and the objective. Another example, division of the objective is conducive to movement by not fires. Units would be firing into each other.

Minor Problem (1, 12): Improper graphic control symbols are used in the illustration. For example, overwatch position.

j. Armer Battalion TAC SOP, 8 May 1985.

SOP EXTRACT COMMENTS

This SOP is mainly a copy of FC 17-17 with the same extract comments and problems

CRITERIA/PROBLEMS/COMMENTS

k. Armer Battalion Battlebook, date unknown.

SOP EXTRACT COMMENTS

DAY ATTACK (No page numbers) AND NIGHT ATTACK  
(Summary of SOP comments: Text includes playbook discussion that specifically addresses an NYC scenario. It includes graphic example that portrays obj's, PL's overwatch, and movement control measures. Movement and attack discussion does include some specific reference to direct fire operations. This playbook is similar but not exactly like the previous playbooks.)

CRITERIA/PROBLEMS/COMMENTS

Criteria: 1(a), 6(S), 12(s), 13(s), 14(a)

Major Problem (1): This set piece planning fails to allow for modifications based on varying enemy situation. As shown obj's are terrain and not enemy oriented.

Major Problem(1): Although some graphics are shown that could be alluded to refer to direct fire employment, as illustrated they would be ineffective. For example, the play has smoke being fired in between the overwatch position and the objective. Another example, division of the objective is conducive to movement by not fires. Units would be firing into each other.

Minor Problem (1, 12): Improper graphic control symbols are used in the illustration. For example, overwatch position.



1. Armor Battalion TAC SOP, 89.

SOP EXTRACT COMMENTS

CRITERIA/PROBLEMS/COMMENTS

This SOP is designed to consist of a series of "cards" that outline specific tasks in checklist format.

PREPARATION FOR COMBAT CHECKS

Criteria: 20(a), 26(s)

(Summary of SOP comments: Text includes an very good list of pre-combat checks, but does not include those involving direct fire systems) (p0-2 thru 0-16) (Note: This section references a card (845) for Prepare to Fire Checklist, however, the card page is blank.

1. COMMAND AND CONTROL

...F. Graphic Control Measures. [Unit] makes operational graphics IAW FM 101-5-1...Additionally, the TF uses the following criteria to name graphic control measures. (Summary - text lists 8 control measures and a code name with an example showing how its used. Includes EA term) (p1-10)

Criteria: 1(a), 12(a)

...A. TLP...

8. SUPERVISE.

Criteria: 1(a), 20(a), 29(a)

- a. Check and re-check all preparations
- b. Check to ensure slice assets are set.(p1-11)

2. MANEUVER.

...II. ACTIONS ON CONTACT.

CARD 200 REACTION TO DIRECT FIRE. (Summary - basic battle drill for reacting to direct fire attack) (p2-21)

Criteria: 1(a), 15(a)

...III. DEFENSIVE OPERATIONS: (Summary contains specific card tasks for direct fire planning (415), direct fire rehearsals (460), prep for battle (475), and range card/sector sketch (447)

Criteria: 1(a), 9(a), 12(a), 20(a), 25(a), 28(s)

Minor Problem: Same degree of discussion is not present for the offensive task lists.

...IV. DELIBERATE ATTACK.

CARD 505 ATTACK TROOP LEADING PROCEDURES. (p2-58)

Criteria: 1(a), 8(s), 9(s), 12(a), 13(a), 28(s)

...3. Analyze Attack Mission W/Key Leaders

Optimal (6): Not full TTP but does highlight requirements.

...e. ID likely Enemy posns/danger areas

f. ID overwatch positions

...4. Backward Plan Time Available W/Key Leaders

... Rehearsal time.

Backbrief time.

Prep To Fire Checks.

Final Prep Checks.

CARD 510 RECON ATTACK AXIS/OBJECTIVE (Summary - contains specific requirements to plan, prepare and execute recon with emphasis on ID'ing enemy positions... overwatch positions... danger areas. Good discussion) (P2-63,4)

Criteria: 1(a), 6(a)

Optimal (9): Not full TTP but does highlight requirements.

CARD 530 REHEARSE ATTACK PLAN. (Summary - text contains specific requirements for prep and execute of rehearsals. Specific rehearsal discussed: actions on the obj, consolidation/reorganization, overwatch/marking targets.) (p2-65,6)

Criteria: 1(a), 9(a), 12(a), 13(a), 28(a)

Optimal (9,28): Not full ttp but does highlight requirements.

CARD 570 OVERWATCH/MARK TARGETS. (Summary - text contains good discussion of occupying, and marking targets. Gives good techniques but actions are based on reaction not planned control measures) (p2-74)

Criteria: 1(a), 6(s), 12(s)

Optimal (12): Good discussion of TTP and requirements for fire control measures.

Minor Problem (1): No planning discussion just reactionary.

CARD 575 SECURE/SEIZE OBJECTIVE. (Summary - text mentions overwatch position, but does not discuss the role or C2 of direct fire systems) (p2-75)

Criteria: 1(a), 6(a), 13(a)

CARD 580 CONSOLIDATE/REORGANIZE. (Summary - text contains a good list of tasks for consolidation and reorganization. Specific tasks are listed for preparing and planning a hasty defense.) (p. 2-76)

Criteria: 1(a), 6(a)

...5. Air Defense. TDP

n. Armor and Infantry TF TAC SOP (Division Standardized) 18 Sep 1989.

#### SOP EXTRACT COMMENTS

#### CRITERIA/PROBLEMS/COMMENTS

APPENDIX 1 ...COMMUNICATIONS. (Summary - text contains a little discussion of other than FM communications and signals. (pA-1-2) It also provides specific discussion

Criteria: 1(s), 12(s), 13(s)

Optimal (1,12,13): Not full TTP but good discussion on requirements

Optimal (1,12,13)

on "Control of Fires Signals."

a. Shift indirect suppressive fires: pyro specified in OPORD. Direct suppressive fire continues on identified enemy targets.

b. Dismounted infantry on obj: pyro specified in OPORD. All direct fire suppression is shifted away from obj. Tanks and TOWs may continue to engage moving identified enemy vehicles only. On order, supporting vehicles move to consolidate on obj.

c. TEP's: On identifiable terrain feature; marked by picket painted for day and chemlite at night on friendly side. whenever possible. (pA-1-3)

APPENDIX 2 ...ORDERS.

...Orders Group ALPHA (hasty planning): (does not include ADO)

...4. When time permits, subordinate units briefback orders... to ensure full understanding...(pA-2-1)

Criteria: 1,19, 19(a), 23(a), 28(a)

Major Problem (19): ADO left out of planning group.

ANNEX B...INTELLIGENCE (Summary - Text discussion includes establishment of PIR's with the S2 recommending, but it fails to ID who approves them.) (pB-4)

Criteria: 4(a)

Major Problem (4): Fails to identify cdr or approval source of PIR's

APPENDIX 2 TO ANNEX C PERSONNEL/SAFETY CHECKLIST  
(Summary of SOP comments: Text includes an A list of pre-combat checks, but does not include specific items involving direct fire systems) (pC-2-1)

Criteria: 28(a), 26(a)

...i. TIES...

Criteria: 12(a)

APPENDIX 5 TO ANNEX C ... OPERATIONAL TERMS.

(Summary of SOP comments: Text includes a list of non-doctrinal operational code words/terms. Some discuss movement and positioning control but does not discuss direct fire control.

ANNEX D...FIRE SUPPORT

(Summary of SOP comments: All discussion involves only indirect fire support.) (pD-1 Thru D-7)

Criteria: 1

Minor Problem (1): Fails to address direct fire systems as fire support, not just artillery.

ANNEX P ...AIR DEFENSE.

(Summary of SOP comments: Text discussion focuses on air defense systems with only reaction reference to other non-air defense systems. No discussion on planning and preparation.

**APPENDIX C**

**Current Studies**

**Bibliographic Essays**

**Appendix C-1: Bibliographic Essay (Study Sequence Number**

**1  
1)**

**STUDY TITLE:** National Training Center (NTC, Observation Division, Combined Arms Assessment Team Report (CAAT): Planning, Preparation and Execution of Direct Fire Operations at the NTC.) (53 pages)

**STUDY TIMEFRAME:** 1985

**PURPOSE:** "The purpose of this report is to analyze certain aspects of direct fire operations conducted by units at the NTC. The goals are to evaluate the adequacy of current doctrine as it relates to direct fire, highlight successful tactics, techniques and procedures, and to identify aspects of direct fire operations which require additional emphasis." (1-p.3)

**STUDY SCOPE/METHODOLOGY:** "The report concentrates on the direct fires delivered by the primary armor killing weapons systems on the battlefield; the tank, the improved TOW vehicle, and the Bradley infantry fighting vehicle." (1-p.3) The study also included both offensive and defensive operations. The study used collection instruments with subjective observer controller comments. The sample comprised 25 separate companies, 75 platoons from 6 different task forces. The study also used the NTC ESX direct fire data base to collect battle damage assessment data. Data base used 101 separate battles by 16 TF's rotations. No live fire data was used.

**REPORT CONCLUSIONS AND CRITERIA INTERFACE SUMMARY:**

**MAJOR REPORT CONCLUSIONS**

**(Not directly related to this studies criteria):**

1. "Units training at the NTC are not achieving as great a proportion of kills of OPFOR armored vehicles as would be required to achieve consistent success in combat operations against an enemy utilizing Soviet style doctrine and tactics." (1-p.24)

2. "Lack of attention to the required level of tactical detail to achieve success." (1-p.25)

3. "Doctrine provides no guidance on standard employment criteria for direct fire weapons." (1-p.25)

4. "In most cases,...unit SOPs [did not] provide specific guidance on how direct fire would be employed in specific instances." (1-p.25)

5. "...control of direct fire operations tends to be so decentralized during execution that the distribution of fires becomes ineffective." (1-p.27)

6. "...engaging targets of opportunity seems to be the norm...rather than massing fires in accordance with a plan." (1-p. 27)

#### OFFENSIVE DIRECT FIRE CRITERIA (ADJUSTED LIST FOR STUDY)

##### DIRECT FIRE PLANNING(General comments)

1. "...lack of focus on providing specific guidance from task force, through company to platoon level on the plan for employment of direct fire in the operation." (1-p.25)

2. "planning...direct fire considerations are not fully considered...in planning for offensive operations." (1-p.26)

##### COMMANDERS GUIDANCE:

###### - INTENT (TYPE FIRES + PURPOSE)

1. Commanders intent for direct fire expressed clearly? TF 12.5%, CO 37.0%, Platoon 42.5%. (offense)(1-p.52)

2. Commanders intent consistent with higher commanders intent? TF 37.5%, CO 63.0%, plt 46.0%. (1-p.46)

3. Plan supports commanders intent? TF 62.5%, CO 48.1%, Plt 35.6%. (offense) (1-p.52)

- IDENTIFIES DIRECT FIRE R&S PRIORITY (PIR/IR)(No specific offensive direct fire information was identified)

- IDENTIFIES ENGAGEMENT PRIORITY(No specific offensive direct fire information was identified)

###### - IDENTIFIES WEAPON'S POSITION/INTEGRATION

1. Cdr intended that overwatch/support by fire element engage outside OPFOR max range? TF 50.0%, CO 55.6%, Plt 39.1%. (offense) (1-p.52)

2. Cdr intended to mass fires? TF 50.0%, CO 48.1%, Plt 39.1%. (offense) (1-p.52)

- IDENTIFIES TECHNIQUES OF FIRES (No specific offensive direct fire information was identified)

- IDENTIFIES FIRE PATTERNS (No specific offensive direct fire information was identified)

- DESIGNATES DIRECT FIRE REHEARSAL TYPE/TIMES (No specific offensive direct fire information was identified)
- DESIGNATES WEAPONS MAINTENANCE PRIORITY (No specific offensive direct fire information was identified)
- DESIGNATES CRITICAL CONTROL MEASURES (No specific offensive direct fire information was identified)

CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC) (general comments):

1. [There is a] relative lack of use of established control measures for their expressly designed purpose

2. Control measures established: TF CO PLT  
(offense) (1-p.53)

a. overwatch positions	62.5	44.4	49.4
b. base of fire positions	37.5	25.9	24.1
c. TRP's	37.5	33.3	18.4
d. company objectives		36.1	
e. boundaries	75.0	22.2	42.5

- ESTABLISHED FOR ACTIONS ON THE OBJECTIVE (No specific offensive direct fire information was identified)
- ESTABLISHED FOR MOVEMENT PHASE (No specific offensive direct fire information was identified)
- ESTABLISHED IN ADEQUATE QUANTITY (No specific offensive direct fire information was identified)
- EASILY IDENTIFIABLE (No specific offensive direct fire information was identified)
- FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION (No specific offensive direct fire information was identified)
- ESTABLISHED TO PREVENT FRATRICIDE: (No specific offensive direct fire information was identified)
- ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL (No specific offensive direct fire information was identified)

DIRECT FIRE PREPARATION(general comments)

1. "...units seem to be performing the basic preparation tasks. However,...more detailed or time consuming the preparation task, the less likely it is to be performed." (1-p.26)

- DIRECT FIRE PLAN/CONTROL MEASURES:
  1. Direct fire specifically addressed unit plan/covered by SOP? TF 37.5%, CO 63.0%, Plt 35.6% (offense) (1-p.52)
    - DISSEMINATED
    - UNDERSTOOD
- COMPANY/PLATOON/SECTION/SQUAD FIRE PLANS PREPARED
  1. "(def opns) lack of detailed fire plans at platoon and company level in most cases do not support a comprehensive organization for battle." (1-p.26)
- INDIVIDUAL WEAPON'S RANGE/SKETCH CARDS PREPARED (No specific offensive direct fire information was identified)
- PREPARATION FOR COMBAT CHECKS:
  1. Precombat checks: CO 88.9%, Plt 72.4% (offense) (1-p.53) (Note: Study did not comment on quality of checks)
- PREPARATION FOR FIRE CHECKS
  1. Boresight/Zero: CO 77.8%, Plt 66.7% (offense) (1-p.53) (Note: Study did not comment on quality of checks)
- DIRECT FIRE REHEARSALS CONDUCTED
  1. "low incidence of rehearsals." (1-p.26)
  2. Rehearsals conducted: Co 51.9%, Plt 36.8% (offense) (1-p.53) (Note: Study did not comment on quality of rehearsals or if they were in direct reference to direct fire)
- SUPERVISION (No specific offensive direct fire information was identified)

1

For brevity purposes the footnote annotation is as follows: (Study Sequence Number-page number from study).



Appendix C-2: Bibliographic Essay (Study Sequence Number  
1  
2)

BRIEFING TITLE: Direct Fire Collection Plan. (13 pages)

AUTHOR/ORGANIZATION: Center for Army's Lessons Learned  
(CALL) and NTC Observation Division (NOD)

COLLECTION PLAN TIMEFRAME: 1987-1988

PURPOSE: The purpose of this briefing is to summarize the results of an NOD direct fire collection plan.

COLLECTION PLAN SCOPE/METHODOLOGY: The collection plan uses collection instruments with subjective observer controller comments. The sample covered six rotations, with 26.5% of the data taken from modernized units (M1/M2). The data reflects both live fire and ESX defensive and offensive operations. The collection instruments focused on:

Plan, Prepare and Execute phases

- Direct fire control measures at TF and Co/Tm levels
- Impact of rehearsals
- C2 and synchronization of direct fire systems (2-

p.5,6)

COLLECTION PLAN AND CRITERIA INTERFACE SUMMARY:

OFFENSIVE DIRECT FIRE CRITERIA  
(ADJUSTED LIST FOR STUDY)

DIRECT FIRE PLANNING (general comments):

1. Task Forces developed direct fire plans during 86.6% of the defensive missions and only 12.1% of the offensive missions. (off & def data) (2-p.11)

2. 43.5% of Armor TF's and 29.6% of the Mech TF's developed direct fire plans. (off & def data) (2-p.11)

COMMANDERS GUIDANCE:

- INTENT (TYPE FIRES + PURPOSE) (No specific offensive direct fire information was identified)
- IDENTIFIES DIRECT FIRE R&S PRIORITY (PIR/IR) (No specific offensive direct fire information was identified)
- IDENTIFIES ENGAGEMENT PRIORITY
  - 1. TF's and Co/Tm's established engagement/target priorities only 12.2% of the time. (off & def data) (2-p.9)

2. During execution target engagement priorities were executed per TF guidance 3.4% of the time. (off & def data) (2-p.10)

- IDENTIFIES WEAPON'S POSITION/INTEGRATION (No specific offensive direct fire information was identified)

- IDENTIFIES TECHNIQUES OF FIRES (No specific offensive direct fire information was identified)

- IDENTIFIES FIRE PATTERNS (No specific offensive direct fire information was identified)

- DESIGNATES DIRECT FIRE REHEARSAL TYPE/TIMES (No specific offensive direct fire information was identified)

- DESIGNATES WEAPONS MAINTENANCE PRIORITY (No specific offensive direct fire information was identified)

- DESIGNATES CRITICAL CONTROL MEASURES (No specific offensive direct fire information was identified)

CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC) (general comments):

1. At TF level only 34.3% of the time do the direct fire control measures support other staff plans. (2-p.7)

2. During execution the TF's use of control measures rated moderately effective or better only 21.9% of the time. (off & def data) (2-p.10)

3. During execution the TF cdr's use of direct fire control measures to control maneuver fires rated moderately effective or better only 14.8% of the time. (off & def data) (2-p.10)

- ESTABLISHED FOR ACTIONS ON THE OBJECTIVE (No specific offensive direct fire information was identified)

- ESTABLISHED FOR MOVEMENT PHASE (No specific offensive direct fire information was identified)

- ESTABLISHED IN ADEQUATE QUANTITY

1. Cdr's did not integrate adequate control measures 77.3% of the time. (off & def data) (2-p.7)

- EASILY IDENTIFIABLE (No specific offensive direct fire information was identified)

- FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION (No specific offensive direct fire information was identified)

- ESTABLISHED TO PREVENT FRATRICIDE (No specific offensive direct fire information was identified)

- ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL (No specific offensive direct fire information was identified)

#### DIRECT FIRE PREPARATION

- DIRECT FIRE PLAN/CONTROL MEASURES:

1. Task Forces emplaced/designated control measures 28.1% of the time. (off & def data) (2-p.8)

- DISSEMINATED

1. 35.3% of applicable crews had key TF control measures. (off & def data) (2-p.8)

- UNDERSTOOD

1. In the defense, control measures were easily identifiable at required ranges 42.8% of the time. (2-p.8)

2. In the defense, control measures were distinguishable 48.5% of the time. (2-p.8)

- COMPANY/PLATOON/SECTION/SQUAD FIRE PLANS PREPARED (No specific offensive direct fire information was identified)

- INDIVIDUAL WEAPON'S RANGE/SKETCH CARDS PREPARED (No specific offensive direct fire information was identified)

- PREPARATION FOR COMBAT CHECKS (No specific offensive direct fire information was identified)

- PREPARATION FOR FIRE CHECKS (No specific offensive direct fire information was identified)

- DIRECT FIRE REHEARSALS CONDUCTED

1. TF's rehearsed use of control measures 8.2% of the time. (off & def data) (2-p.7)

2. 28.5% of TF's that developed direct fire plans rehearsed direct fire. (off & def data) (2-p.11) (Note: TF's developed direct fire plans only 12.1% of the time during the offense). (off & def data) (2-p.11)

3. OC's rated 45.5% of the rehearsals conducted as "ineffective". (off & def data) (2-p.12)

4. Backbriefs most widely used rehearsal technique (37.9 of all rehearsals conducted). (off & def data) (2-p.12)

5. During preparation for battles more thorough rehearsals were possible 79.7 of the time. (off & def data) (2-p.12)

6. (Execute phase) 25.8% of the TF's attempted to conduct direct fire as rehearsed. (off & def data) (2-p.13)

7. (Execute phase) The OC's rated rehearsals moderately effective or better in terms of cost to unit's time and assets 26.8% of the time.

- SUPERVISION (No specific offensive direct fire information was identified)

1

For brevity purposes the footnote annotation is as follows: (Study Sequence Number-page number from study).

**Appendix C-3: Bibliographic Essay (Study Sequence Number 1  
3)**

**BRIEFING TITLE:** USAIS Direct Fire Capability, Modernization Force Assessment: "MILES vs TOW Missile" Excursion.

**AUTHOR/ORGANIZATION(S):** United States Army Infantry School (USAIS)

**STUDY TIMEFRAME:** 3 to 16 February 1988 and 22 March to 4 April 1988.

**PURPOSE:** This study/briefing had the following objectives:

1. Determine the degree to which the TOW MILES missiles engagement outcomes replicate the outcomes of TOW LIVE missile engagements on the dirty battlefield.
2. To identify "non-gunnery" related factors that have/make a major contribution to NTC engagement outcomes (both live fire and force on force); conduct preliminary assessment within capability.
3. Assess the feasibility/utility of MILES to serve as a part of the qualification strategy for TOW gunners and crew qualification. (3-p.3)

**STUDY SCOPE/METHODOLOGY:** The study cover rotations 88-5 and 88-7. During these rotations Subject Matter Experts from USAIS monitored crew preparation and firing of live and MILES TOW missiles. Study focused on day and night defense and day attack during the live fire scenario.

**STUDY AND CRITERIA INTERFACE SUMMARY:**

**MAJOR REPORT CONCLUSIONS**

**(Not directly related to this studies criteria):**

1. TOW contribution to the NTC battlefield hits/kills was small. Contributing factors include:
  - Maintenance (Turret, Automotive, MILES)
  - Gunner/Crew skills
  - Squad Structure (Lack of loader-BFV)
  - Boresight and Zero Procedures
  - Gunnery at NTC is degrades
  - Lack of experience, technical knowledge and training with live ordnance had a negative impact on hit/miss results
  - MILES TOW performance was sufficient to simulate basic TOW missile effects. (TOW II performance not assessed) (offense and defense Opns) (3-p.13)
2. Crew Knowledgeable, however, performance deteriorated as exercise continued. (offense and defense Opns) (3-p.18)

3. Organizational and DS maintenance problems:  
operational  
- many system had only one launch tube  
- 17 of 26 TOW platforms MC - Armor TF  
- some sights required nitrogen purging  
- limited ITV PLL available. (offense and defense  
Opns) (3-p.18)

OFFENSIVE DIRECT FIRE CRITERIA  
(ADJUSTED LIST FOR STUDY)

DIRECT FIRE PLANNING (No specific reference to direct fire planning in this study)

COMMANDERS GUIDANCE: (No specific reference to direct fire planning in this study)

- INTENT (TYPE FIRES + PURPOSE) (No specific reference to direct fire planning in this study)
- IDENTIFIES DIRECT FIRE R&S PRIORITY (PIR/IR) (No specific reference to direct fire planning in this study)
- IDENTIFIES ENGAGEMENT PRIORITY (No specific reference to direct fire planning in this study)
- IDENTIFIES WEAPON'S POSITION/INTEGRATION (No specific reference to direct fire planning in this study)
- IDENTIFIES TECHNIQUES OF FIRES (No specific reference to direct fire planning in this study)
- IDENTIFIES FIRE PATTERNS (No specific reference to direct fire planning in this study)
- DESIGNATES DIRECT FIRE REHEARSAL TYPE/TIMES (No specific reference to direct fire planning in this study)
- DESIGNATES WEAPONS MAINTENANCE PRIORITY (No specific reference to direct fire planning in this study)
- DESIGNATES CRITICAL CONTROL MEASURES (No specific reference to direct fire planning in this study)

CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC): (No specific reference to direct fire planning in this study)

- ESTABLISHED FOR ACTIONS ON THE OBJECTIVE (No specific reference to direct fire planning in this study)

- ESTABLISHED FOR MOVEMENT PHASE (No specific reference to direct fire planning in this study)
- ESTABLISHED IN ADEQUATE QUANTITY (No specific reference to direct fire planning in this study)
- EASILY IDENTIFIABLE (No specific reference to direct fire planning in this study)
- FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION (No specific reference to direct fire planning in this study)
- ESTABLISHED TO PREVENT FRATRICIDE (No specific reference to direct fire planning in this study)
- ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL (No specific reference to direct fire planning in this study)

#### DIRECT FIRE PREPARATION

1. 11H soldiers not fully familiar with AN/TAS-4 night sight. (offense and defense Opns) (3-p.19)
2. 11M soldiers basic gunner [TOW] skills limited.

- DIRECT FIRE PLAN/CONTROL MEASURES: (Not specifically discussed)
  - DISSEMINATED (Not specifically discussed)
  - UNDERSTOOD (Not specifically discussed)
- COMPANY/PLATOON/SECTION/SQUAD FIRE PLANS PREPARED (Not specifically discussed)
- INDIVIDUAL WEAPON'S RANGE/SKETCH CARDS PREPARED (Not specifically discussed)
- PREPARATION FOR COMBAT CHECKS (Not specifically discussed)
- PREPARATION FOR FIRE CHECKS
  1. Individual and crew training proficiency needs improvement in...Boresight and Zero procedures (ITV and BFV). (offense and defense Opns) (3-p.14)
- DIRECT FIRE REHEARSALS CONDUCTED (Not specifically discussed)
- SUPERVISION (Not specifically discussed)

1

For brevity purposes the footnote annotations is as follows: (Study Sequence Number - Page Number from Study). This paper is study sequence number 3.

Appendix C-4: Bibliographic Essay (Study Sequence Number  
1  
(SSN) 4,5)

BRIEFING TITLES: USAARMC Direct Fire Issues: USSARMC Tank Direct Fire Focused Rotation 89-3 - Observations and Recommendations (Briefing) (SSN 4) (15 pages) USAARMC Observation Team Gunnery Special Focus Rotation NTC Rotation 88-4 (Initial briefing slides, rotation changed to 89-3) (SSN 5) (30 pages) [These two briefings are summarized and analyzed together because they apply to the same rotation]

AUTHOR/ORGANIZATION(S): United States Army Armor Center (USAARMC)

STUDY TIMEFRAME: Rotation 89-3, 15 Nov - 15 Dec 88.

PURPOSE: "The purpose of these briefings is:

SSN 4 - To summarize the observations and recommendations for the rotation.

SSN 5 - To outline the rotation objectives and methodology. The objectives were to determine (This was the plan not the results):

- Validity of current gunnery doctrine and technical procedures.

- To provide NTC with a technical checklist to link live fire unit performance to individual tank preparatory actions. (5-p.2)

STUDY SCOPE/METHODOLOGY: This rotation concentrates on the technical gunnery aspects of the Tank platoon. The study also includes both offensive and defensive operations. The study used collection instruments with subjective SME's from USAARMC comments. The sample comprised 12 tank platoons. (5-p.3-30)

STUDY AND CRITERIA INTERFACE SUMMARY:

MAJOR REPORT CONCLUSIONS

(Not directly related to this studies' criteria)

1. Target acquisition a major problem, especially in offensive operations. (4-p.6)

2. Live fire technical gunnery proficiency is weak because it does not matter. (offense and defense data) (4-p.8)

3. We are being misled by round/kill data...We can not achieve 1.2 rounds/kill as a sterile table VIII range in USAREUR, but we can do better than 4.65-10.93:1 (offense and defense data) (4-p.8)



OFFENSIVE DIRECT FIRE CRITERIA  
(ADJUSTED LIST FOR STUDY)

DIRECT FIRE PLANNING

COMMANDERS GUIDANCE:

1. Platoon orders often not given or incomplete. (lack of planning time and/or poor company guidance) (offense and defense data) (4-p.9)
- INTENT (TYPE FIRES + PURPOSE) (Not specifically addressed)
  - IDENTIFIES DIRECT FIRE R&S PRIORITY (PIR/IR) (Not specifically addressed)
  - IDENTIFIES ENGAGEMENT PRIORITY
    1. Specific engagement criteria provided 42% of occasions. (offense and defense data) (4-p.7)
  - IDENTIFIES WEAPON'S POSITION/INTEGRATION
    1. Tank crews are frequently frustrated by malpositioning by their leaders. (offense and defense data) (4-p.9)
  - IDENTIFIES TECHNIQUES OF FIRES (Not specifically addressed)
  - IDENTIFIES FIRE PATTERNS (Not specifically addressed)
  - DESIGNATES DIRECT FIRE REHEARSAL TYPE/TIMES (Not specifically addressed)
  - DESIGNATES WEAPONS MAINTENANCE PRIORITY (Not specifically addressed)
  - DESIGNATES CRITICAL CONTROL MEASURES (Not specifically addressed)

CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC):(general comments)

1. (Execution phase) Platoons were observed actually controlling and distributing direct fires(use of control measures or fire commands) 43% of occasions. (offense and defense data) (4-p.7)
- ESTABLISHED FOR ACTIONS ON THE OBJECTIVE (Not specifically addressed)
  - ESTABLISHED FOR MOVEMENT PHASE (Not specifically addressed)

- ESTABLISHED IN ADEQUATE QUANTITY (Not specifically addressed)
- EASILY IDENTIFIABLE (Not specifically addressed)
- FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION (Not specifically addressed)
- ESTABLISHED TO PREVENT FRATRICIDE (Not specifically addressed)
- ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL (Not specifically addressed)

#### DIRECT FIRE PREPARATION

##### - DIRECT FIRE PLAN/CONTROL MEASURES:

1. All tanks on company net (over 50% of occasions) preclude platoon fire control in execution, and by implication in planning. (offense and defense data) (4-p.9)
  - DISSEMINATED (Not specifically addressed)
  - UNDERSTOOD (Not specifically addressed)

##### - COMPANY/PLATOON/SECTION/SQUAD FIRE PLANS PREPARED

1. Platoon orders often not given or incomplete. (lack of planning time and/or poor company guidance) (offense and defense data) (4-p.9)
2. Fire plans and range sketch cards are not well understood or carefully prepared and checked. (offense and defense data) (4-p.10)

##### - INDIVIDUAL WEAPON'S RANGE/SKETCH CARDS PREPARED

1. Fire plans and range sketch cards are not well understood or carefully prepared and checked. (offense and defense data) (4-p.10)

##### - PREPARATION FOR COMBAT CHECKS (Not specifically addressed)

##### - PREPARATION FOR FIRE CHECKS

1. During boresighting, across the 12 platoons observed, crews rarely understood what they were doing, why they were doing it, or how to do it.
  - a. Muzzle Boresight Devices (MBD) brought from homestation in many cases were not calibrated, and crews did not know how to determine if calibration was needed nor that calibration was required.
  - b. Environmental data was almost never requested. Often data was applied by 'swag.' Crews do not use manual override in high, gusty winds for wind sensor.

c. Crews demonstrated a lack of understanding and/or proper use of:

- muzzle reference system (46% of occasions)
- ammunition subdesignations (37% of occasions)
- computer correction factors (37% of occasions) (offense and defense data) (4-p.4,5)

2. In live fire, of tanks present and checked, 29% had correctly indexed manual inputs and correctly completed prep to fire checks. (offense and defense data) (4-p.6)

- DIRECT FIRE REHEARSALS CONDUCTED (Not specifically addressed)

- SUPERVISION (Not specifically addressed)

1

For brevity purposes the footnote annotations is as follows: (Study Sequence Number - Page Number from Study).

**Appendix C-5: Bibliographic Essay (Study Sequence Number  
1  
(SSN) 6,7 & 8)**

**BRIEFING TITLES:** USAARMC Direct Fire Issues: NTC Rotations 89-3/89-12 Armor School Direct Fire White Paper (Briefing slides) (SSN 6) (12 pages). Initial Company Collection Instrument Observations, Tactical Direct Fire Rotation 89-12. (SSN 7)(29 pages). Tactical Direct Fire Study Team Observations and Recommendations -- Rotation 89-12. (SSN 8) (5 pages)

**AUTHOR/ORGANIZATION(S):** United States Army Armor Center (USAARMC)

**STUDY TIMEFRAME:** August 89

**PURPOSE:** The purpose of these reports and briefing are:  
SSN 6 - To summarize the observations and recommendations for both rotations.

SSN 7 - To summarize collection instruments observations.

SSN 8 - To summarize Team observations and recommendations.

**STUDY SCOPE/METHODOLOGY:** This report concentrates on the direct fires of M1/M2's. The study also included both offensive and defensive operations. The study used SME's from the Infantry and Armor schools to collect data on collection instruments. The sample comprised four company/teams.

**STUDY AND CRITERIA INTERFACE SUMMARY:**

**MAJOR REPORT CONCLUSIONS**

(Not directly related to this studies' criteria):

1. Doctrine:
  - a. No link between IPB and direct fire planning (why and where to establish engagement area).
  - b. Doctrinal basis for offensive direct fire planning is missing.
  - c. No single source document for direct fire synchronization with combat multipliers.
  - d. Doctrine for rehearsals/backbriefs needed (definitions, techniques, and intended results).
  - e. Difference in doctrine form IN and AR schools:

- 1). Range card/sector sketches
- 2). Fire commands
- 3). Drills

f. Insufficient doctrine integrating M1/M2 employment.

g. Doctrine should address and specify simultaneous vs. sequential direct fire tasks (planning, preparation, and execution).

h. Leaders are not familiar with existing doctrine. (8-p.1)

2. Mounted and dismounted fires synchronization not trained. (offensive and defensive operations) (8-p.2)

3. (Execution phase) Number of rounds fired (volume of fire) is weak. (offensive and defensive operations) (8-p.2)

4. (Execution phase) Firing techniques weak (stayed exposed too long). (offensive and defensive operations) (8-p.2)

5. Direct fire doctrine does not provide sufficient guidance for offensive fire planning. (7-p.1)

#### OFFENSIVE DIRECT FIRE CRITERIA (ADJUSTED LIST FOR STUDY)

##### DIRECT FIRE PLANNING(general comments)

1. Task force not trained in direct fire planning:
  - a. Troop leading procedures
  - b. Detailed IPB at all levels
  - c. Massing fires
  - d. Direct fire plan did not support the scheme of maneuver (offensive and defensive operations) (8-p.2)
2. Fratricide avoidance not considered in direct fire plan. (offensive and defensive operations) (8-p.3)
3. Formal fire planning was particularly weak. (offensive and defensive operations) (7-p.1)
4. Offensive fire planning was done even less than defensive fire planning at both company/team and platoon levels. (offensive and defensive operations) (7-p.2)
5. Commander and staff planning for direct fire is poor. (offensive and defensive operations) (6-p.6)

##### COMMANDERS GUIDANCE:

1. Commander and staff planning for direct fire is poor. (offensive and defensive operations) (6-p.6)

- INTENT (TYPE FIRES + PURPOSE) (Not specifically addressed)

- IDENTIFIES DIRECT FIRE R&S PRIORITY (PIR/IR) (Not specifically addressed)

- IDENTIFIES ENGAGEMENT PRIORITY (Not specifically addressed)

- IDENTIFIES WEAPON'S POSITION/INTEGRATION

1. Difficulty in positioning platoons to engage from different points/angles. (offensive and defensive operations) (7-p.2)

2. Large scale reliance on column formations hindered the ability of platoons to return and mass fires. (offensive and defensive operations) (7-p.2)

- IDENTIFIES TECHNIQUES OF FIRES (Not specifically addressed)

- IDENTIFIES FIRE PATTERNS

1. TF and co/tm never planned to use volley fires to rapidly destroy OPFOR units. (offensive and defensive operations) (7-p.3)

- DESIGNATES DIRECT FIRE REHEARSAL TYPE/TIMES (Not specifically addressed)

- DESIGNATES WEAPONS MAINTENANCE PRIORITY (Not specifically addressed)

- DESIGNATES CRITICAL CONTROL MEASURES (Not specifically addressed)

CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC):

1. (Execution phase) Co/Plt fire commands were seldom used and subsequent fire commands were never used. (offensive and defensive operations) (7-p.2)

2. (Execution phase) Co/plts failed to mass the fires of both their primary weapons and their machineguns.

3. (Execution phase) All companies experienced fratricide with other TF units. One company experienced internal fratricide. Insufficient coordination and limited visibility were the most frequent contributing factors. (offensive and defensive operations) (7-p.4)

- ESTABLISHED FOR ACTIONS ON THE OBJECTIVE

1. Consolidation/reorganization on the objective plan not integrated with direct fire plan. (offensive and defensive operations) (8-p.2)

2. Actions on the objective collective training problems. (offensive and defensive operations) (8-p.2)

3. Multiple TRP's or checkpoints and SBF positions were not designated throughout the depth of objectives to rapidly shift and mass fires. (offensive and defensive operations) (7-p.2)

- ESTABLISHED FOR MOVEMENT PHASE

1. Actions on contact collective training problems. (offensive and defensive operations) (8-p.2)

2. Multiple TRP's or checkpoints and SBF positions were not designated throughout the depth of objectives to rapidly shift and mass fires. (offensive and defensive operations) (7-p.2)

- ESTABLISHED IN ADEQUATE QUANTITY

1. Only one co/tm consistently added both support-by-fire positions (SBF) and TRP's to its graphics. (offensive and defensive operations) (7-p.2)

2. Multiple TRP's or checkpoints and SBF positions were not designated throughout the depth of objectives to rapidly shift and mass fires. (offensive and defensive operations) (7-p.2)

- EASILY IDENTIFIABLE

1. TRP's were almost never sited on recognizable terrain features.

- ESTABLISHED TO PREVENT FRATRICIDE (Not specifically addressed)

- FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION (Not specifically addressed)

- ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL (Not specifically addressed)

DIRECT FIRE PREPARATION

- DIRECT FIRE PLAN/CONTROL MEASURES:

1. Generally inadequate detail in CO/TM graphics. (offensive and defensive operations) (7-p.E1)

2. Formal fire planning was particularly weak. (offensive and defensive operations) (7-p.1)

3. A majority of company commanders did not produce a company fire plan. (offensive and defensive operations) (7-p.1)

- DISSEMINATED (Not specifically addressed)

- UNDERSTOOD (Not specifically addressed)

- COMPANY/PLATOON/SECTION/SQUAD FIRE PLANS PREPARED

1. CO/TF fire control planning not done. (offensive and defensive operations) (8-p.2)

- INDIVIDUAL WEAPON'S RANGE/SKETCH CARDS PREPARED
  1. Range cards not to standard. (offensive and defensive operations) (8-p.2)
- PREPARATION FOR COMBAT CHECKS (Not specifically addressed)
- PREPARATION FOR FIRE CHECKS (Not specifically addressed)
- DIRECT FIRE REHEARSALS CONDUCTED
  1. Platoon leaders rehearse the direct fire plan only on a sporadic basis in one CO/TM and not at all in the other three. (offensive and defensive operations) (7-p.D1)
  2. Some of the company weaknesses would have been corrected if more thorough direct fire rehearsals had been performed. (offensive and defensive operations) (7-p.3)
  3. Since the vast majority of platoons did not rehearse the direct fire plan most TC's and squad leaders did not have a clear idea of when to shoot, where to shoot, and what to shoot until the unit got into a fight. This was particularly true in the offense. (offensive and defensive operations) (7-p.3)
  4. Rehearsals are generally ineffective. (offensive and defensive operations) (6-p.6)
- SUPERVISION

1

For brevity purposes the footnote annotations is as follows: (Study Sequence Number - Page Number from Study).



Appendix C-6: Bibliographic Essay (Study Sequence Number  
1  
(SSN) 9

STUDY TITLES: National Training Center NCO Support Channel Reports: 1987 Summary (SSN 9A), (7 pages), 1ST QTR 1988 Summary (SSN 9B), (3 pages), 2ND QTR Summary (SSN 9C), (3 pages).

AUTHOR/ORGANIZATION(S): NTC Observation Division (NOD), SFC Schrader.

STUDY TIMEFRAME: 1987, 1st two quarter 1988.

PURPOSE: The purpose of these is to summarize NCO trends at the NTC.

STUDY SCOPE/METHODOLOGY: These are recurring reports that summarize observations specifically involving NCO's. These observations are consolidated at the NOD and forwarded to CALL for analysis.

STUDY AND CRITERIA INTERFACE SUMMARY:

MAJOR REPORT CONCLUSIONS

(Not directly related to this studies' criteria)

1. Although very complete SOP's existed, in most cases NCO's did not acknowledge or follow this valuable tool. This was particularly true with the battalion SOP. (offense and defense operations) (9A-p.4)

OFFENSIVE DIRECT FIRE CRITERIA  
(ADJUSTED LIST FOR STUDY)

DIRECT FIRE PLANNING

COMMANDERS GUIDANCE:

1. Some NCO's had [valid] complains involving the lack of guidance and the task force planning group taking too much time to issue the TF operations. (offense and defense operations) (9A-p.4)

- INTENT (TYPE FIRES + PURPOSE)

1. In most cases, the company commander's intent or the battalion commander's intent was not discussed or briefed in the OPORD. When the commander's intent did reach the platoons it was at the most times very vague. (offense and defense operations) (9A-p.6)

- IDENTIFIES DIRECT FIRE R&S PRIORITY (PIR/IR) (No Specific Comment)

- IDENTIFIES ENGAGEMENT PRIORITY (No Specific Comment)
  - IDENTIFIES WEAPON'S POSITION/INTEGRATION (No Specific Comment)
  - IDENTIFIES TECHNIQUES OF FIRES (No Specific Comment)
  - IDENTIFIES FIRE PATTERNS (No Specific Comment)
  - DESIGNATES DIRECT FIRE REHEARSAL TYPE/TIMES (No Specific Comment)
  - DESIGNATES WEAPONS MAINTENANCE PRIORITY (No Specific Comment)
  - DESIGNATES CRITICAL CONTROL MEASURES (No Specific Comment)
- CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC): (No Specific Comment)
- ESTABLISHED FOR ACTIONS ON THE OBJECTIVE (No Specific Comment)
  - ESTABLISHED FOR MOVEMENT PHASE (No Specific Comment)
  - ESTABLISHED IN ADEQUATE QUANTITY (No Specific Comment)
  - EASILY IDENTIFIABLE (No Specific Comment)
  - FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION (No Specific Comment)
  - ESTABLISHED TO PREVENT FRATRICIDE (No Specific Comment)
  - ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL (No Specific Comment)

#### DIRECT FIRE PREPARATION

- DIRECT FIRE PLAN/CONTROL MEASURES:
  - DISSEMINATED
    1. NCO's were weak in keeping their subordinates informed of the mission Overall, the lowest enlisted soldiers did not know the details of the upcoming mission. (offense and defense operations) (9A-p.3)
    2. In most cases, the company commander's intent or the battalion commander's intent was not discussed or

briefed in the OPORD. When the commander's intent did reach the platoons it was at the most times very vague. (offense and defense operations) (9A-p.6)

- UNDERSTOOD

1. In most cases, the company commander's intent or the battalion commander's intent was not discussed or briefed in the OPORD. When the commander's intent did reach the platoons it was at the most times very vague. (offense and defense operations) (9A-p.6)

- COMPANY/PLATOON/SECTION/SQUAD FIRE PLANS PREPARED (No Specific Comment)

- INDIVIDUAL WEAPON'S RANGE/SKETCH CARDS PREPARED

1. Range cards and sector sketches were not done consistently or to standard...Where range cards were done they were not available in all positions. This resulted in weak and lack of fire control. (offense and defense operations) (9A-p.5)

- PREPARATION FOR COMBAT CHECKS

1. Some NCO's seemed to lack discipline and could not instill discipline or the need for it in their subordinates. In some cases when platoon leaders were absent, maintenance, boresighting, and precombat checks did not receive the same intense emphasis. (offense and defense operations) (9A-p.1)

2. Throughout the task forces, precombat checks, ammo accountability, and weapons function checks were being conducted daily, but not with the constant emphasis required to ensure all areas were checked. The quality of these precombat inspections were at most time questionable. (offense and defense operations) (9A-p.4)

3. NCO weakness: not making sure that individual and crew served weapons were being cleaned. (Firepower/distribution was lost due to dirty, malfunctioning weapons) (offense and defense operations) (9C-p.2)

- PREPARATION FOR FIRE CHECKS

1. Some NCO's seemed to lack discipline and could not instill discipline or the need for it in their subordinates. In some cases when platoon leaders were absent, maintenance, boresighting, and precombat checks did not receive the same intense emphasis. (offense and defense operations) (9A-p.1)

- DIRECT FIRE REHEARSALS CONDUCTED

1. Some crew drills and rehearsals are being performed, but they are often not to standard. (offense and defense operations) (9C-p.1)

- SUPERVISION

1. Some NCO's seemed to lack discipline and could not instill discipline or the need for it in their subordinates. In some cases when platoon leaders were absent, maintenance, boresighting, and precombat checks did not receive the same intense emphasis.

(offense and defense operations) (9A-p.1)

2. Task force NCO's were making spot checks and corrections, but not to the level of detail needed. Occasionally, weapon systems would not fire because they had not been checked. In some instances, NCO's observed something being done wrong, and accepted it rather than making a correction. Junior NCO's were not always as stringent as they should have been. (offense and defense operations) (9A-p.5)

3. Most 'SG's were very involved in the CSS plan, with very little time devoted to assistance in the preparation of the tactical mission. It is also noted that very little time was available to provide tactical and technical guidance to subordinates or to be present at the company OPORD. (offense and defense operations) (9B-p.2) and (9C-p.1,2)

4. In the opinion of the company OC's the junior NCO's are weak in training and supervision of mission oriented tasks. (offense and defense operations) (9B-p.2)

5. NCO's are being observed making spot corrections. In most cases they are not following up to see if the discrepancies are in fact being corrected. (offense and defense operations) (9C-p.1)

1

For brevity purposes the footnote annotations is as follows: (Study Sequence Number - Page Number from Study).

Appendix C: Bibliographic Essay (Study Sequence Number 10)  
1

STUDY TITLE: Applying the National Training Center Experi-  
ence Incidence of Ground-to-Ground Fratricide. (SSN 10)<sup>2</sup> (39  
pages)

AUTHOR/ORGANIZATION(S): RAND, Martin Goldsmith.

STUDY TIMEFRAME: Seven rotations in 1985-86.

PURPOSE: "The purpose of this research was to use the data available from the NTC instrumentation and observer systems to measure the frequency of fratricidal ground-to-ground engagements and to estimate their importance to battle outcome. (10-p.iii)

STUDY SCOPE/METHODOLOGY: This study evaluated 15 battalion task force for incidents of fratricide. 83 battles were evaluated for direct fire fratricides. 116 battles were evaluated for indirect fratricides. Battles included both offense and defensive operations. No live fire data was used. The study only includes fratricide engagements between tanks, TOW's and APC's.

MAJOR REPORT CONCLUSIONS

(Not directly related to this studies' criteria)  
(Execution Phase Conclusions)

1. "Of the friendly (Blue Force) vehicles killed in battle, at least 1 percent are killed by friendly (direct) fire." (10-p.vii)
2. "Most direct fire fratricides are isolated instances." (10-p.vii)
3. "Multiple kills ... were found in four out of twelve battles." (10-p.vii)
4. "one-half of the direct fire fratricides could have been prevented had the shooting vehicle been aware of the location of a sister organizational unit, for the destroyed vehicle was located in a friendly formation with no enemy nearby. Another third of the cases could have been prevented if the shooter had knowledge of the location of individual isolated friendly vehicles,,,.One-sixth of the cases involved the killing of a friendly vehicle while close to opposing force (OPFOR) elements. (10-p.vi)
5. "...fratricide is more frequent in night attacks. (10-p.13)

STUDY AND CRITERIA INTERFACE SUMMARY:

OFFENSIVE DIRECT FIRE CRITERIA  
(ADJUSTED LIST FOR STUDY)

DIRECT FIRE PLANNING

COMMANDERS GUIDANCE: (No specific comments)

- INTENT (TYPE FIRES + PURPOSE)

1. "... a better understanding of the commander's intent and plan might avoid some of the [fratricide] errors." (10-p.13)

- IDENTIFIES DIRECT FIRE R&S PRIORITY (PIR/IR) (No specific comments)

- IDENTIFIES ENGAGEMENT PRIORITY (No specific comments)

- IDENTIFIES WEAPON'S POSITION/INTEGRATION (No specific comments)

- IDENTIFIES TECHNIQUES OF FIRES (No specific comments)

- IDENTIFIES FIRE PATTERNS (No specific comments)

- DESIGNATES DIRECT FIRE REHEARSAL TYPE/TIMES (No specific comments)

- DESIGNATES WEAPONS MAINTENANCE PRIORITY (No specific comments)

- DESIGNATES CRITICAL CONTROL MEASURES (No specific comments)

CONTROL MEASURES (AUDIO, VISUAL, GRAPHIC):

1. Because some of the fratricidal events seem to occur when there is little likelihood of OPFOR being in the area, one could consider the institution of fire control procedures for all weapons during some phases of a battle, much akin to those used for air defense ("Weapons Tight," etc.). (10-p.13)

- ESTABLISHED FOR ACTIONS ON THE OBJECTIVE (No specific comments)

- ESTABLISHED FOR MOVEMENT PHASE (No specific comments)

- ESTABLISHED IN ADEQUATE QUANTITY (No specific comments)

- EASILY IDENTIFIABLE (No specific comments)

- ESTABLISHED TO PREVENT FRATRICIDE (No specific comments)
- FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION (No specific comments)

- ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL (No specific comments)

DIRECT FIRE PREPARATION (No specific comments)

- DIRECT FIRE PLAN/CONTROL MEASURES: (No specific comments)
  - DISSEMINATED (No specific comments)
  - UNDERSTOOD (No specific comments)

- COMPANY/PLATOON/SECTION/SQUAD FIRE PLANS PREPARED (No specific comments)

- INDIVIDUAL WEAPON'S RANGE/SKETCH CARDS PREPARED (No specific comments)

- PREPARATION FOR COMBAT CHECKS (No specific comments)

- PREPARATION FOR FIRE CHECKS (No specific comments)

- DIRECT FIRE REHEARSALS CONDUCTED (No specific comments)

- SUPERVISION (No specific comments)

1

For brevity purposes the footnote annotations is as follows: (Study Sequence Number - Page Number from Study).

2

SSN - Study sequence number

Appendix C-8: Bibliographic Essay (Study Sequence Number

<sup>1</sup>  
11)

<sup>2</sup>  
STUDY TITLE: NTC Take Home Packages. (SSN 11)

AUTHOR/ORGANIZATION(S): NTC Operations Group, NTC Observation Division (NOD), Center for Army Lessons Learned (CALL).

STUDY TIMEFRAME: FY 1985-89.

PURPOSE: These take home packages are maintained for two purposes: First, to facilitate the training of participating units and second, to facilitate trend analysis.

STUDY SCOPE/METHODOLOGY: NA

STUDY AND CRITERIA INTERFACE SUMMARY:

OFFENSIVE DIRECT FIRE CRITERIA  
(ADJUSTED LIST FOR STUDY)

<sup>3</sup>  
OBSERVER CONTROLLER TAKE HOME PACKAGE  
COMMENTS ANALYSIS SUMMARY

<u>Criteria</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>	<u>H</u>
1. DIRECT FIRE PLANNING	1	45	96	3	120	36	3	116
2. COMMANDERS GUIDANCE:	1	54	63	4	113	45	10	21
3. - INTENT (TYPE FIRES + PURPOSE)	1	1	4	10	0	0	0	5
4. - IDENTIFIES DIRECT FIRE R&S PRIORITY (PIR/IR)	1	76	15	20	130	21	15	115
5. - IDENTIFIES ENGAGEMENT PRIORITY	1	5	10	0	25	16	0	0
6. - IDENTIFIES WEAPON'S POSITION/INTEGRATION	1	3	5	0	7	2	0	0
7. - IDENTIFIES TECH'S OF FIRES	1	2	1	0	4	0	0	0
8. - IDENTIFIES FIRE PATTERNS	1	7	1	0	7	0	0	0
9. - DESIGNATES DIRECT FIRE REHEARSAL TYPE/ TIMES	1	10	0	0	13	6	0	0
10. - DESIGNATES WEAPONS MAINTENANCE PRIORITY	1	13	0	0	21	35	5	17
11. - DESIGNATES CRITICAL CONTROL MEASURES	1	27	9	3	73	20	0	0



<u>Criteria</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>	<u>H</u>
12. CONTROL MEASURES (AUDIO,VISUAL,GRAPHIC):	1	40	37	17	134	38	10	63
13. - ESTABLISHED FOR ACTIONS ON THE OBJECTIVE	1	13	11	4	37	41	3	27
14. - ESTABLISHED FOR MOVEMENT PHASE	1	2	26	2	29	33	6	21
15. - ESTABLISHED IN ADEQUATE QUANTITY	1	25	18	1	25	26	0	0
16. - EASILY IDENTIFIABLE	1	22	11	0	31	12	0	0
17. - FACILITATES DIRECT FIRE ON IDENTIFIED ENEMY LOCATION	1	21	8	4	24	10	4	11
18. - DESIGNATED TO PREVENT FRATRICIDE	1	7	12	0	11	7	0	4
19. - ESTABLISHED FOR DIRECT FIRE AIR DEFENSE CONTROL	1	7	17	0	13	35	0	2
20. DIRECT FIRE PREP	1	37	11	10	51	30	9	31
21. - DIRECT FIRE PLAN/ CONTROL MEASURES:	1	13	27	4	113	67	21	87
22. * DISSEMINATED	1	23	10	8	65	34	0	0
23. * UNDERSTOOD	1	32	11	1	53	21	0	0
24. - COMPANY/PLATOON/ SECTION/SQUAD FIRE PLANS PREPARED	1	45	6	0	123	26	0	76
25. - INDIVIDUAL WEAPON'S RANGE/SKETCH CARDS PREPARED	1	56	1	1	76	112	0	103
26. - PREPARATION FOR COMBAT CHECKS	1	62	6	56	63	21	0	154
27. - PREPARATION FOR FIRE CHECKS	1	23	17	12	58	15	0	76
28. - DIRECT FIRE REHEARSALS CONDUCTED	1	39	5	0	36	59	7	63
29. - SUPERVISION	1	0	46	19	44	17	5	32

Key:

- A. Overall Rating (0-3)
  - 0 - Not Addressed
  - 1 - Problems
  - 2 - Adequate
  - 3 - Optimal
- B. Understood
- C. Not Understood
- D. Consistently Applied
- E. Inconsistently Applied
- F. Not Applied
- G. Effectively applied
- H. Not Effective applied

1

For brevity purposes the footnote annotations is as follows: (Study Sequence Number - Rotation Number). This paper is study sequence number 11)

2

SSN - Study sequence number

3

The summary numbers were determined by reviewing OC comments from FY89 take-home packages. Not all comments specifically referenced direct fire operations, however, content could be applied or alluded too. For example, "unit failed to develop a plan although adequate time was available." This comment would therefore apply to criteria 1.

## **APPENDIX D**

### **Terminology Discrepancies**

## Appendix D

### TERMINOLOGY DISCREPANCIES

This appendix addresses direct fire related terms. It is divided into two sections. Section I lists terms defined in FM 101-5-1 and have differing definitions in other manuals. This section also lists their respective definitions. Section II lists terms that are not defined in FM 101-5-1 and their respective definitions. Recommend commanders standardize the definitions in their SOP's.

#### SECTION I: FM 101-5-1 OPERATIONAL TERMS<sup>1</sup>

##### Active Air Defense:

a. Direct defensive action taken to nullify or reduce the effectiveness of hostile air action. It includes such measures as the use of aircraft, air defense weapons, weapons not used primarily in an air defense role and electronic warfare. (JCS pub 1, DOD, NATO) p. 3.

b. Direct defensive action taken to destroy attacking enemy aircraft or missiles or to nullify or reduce the effectiveness of such attack. It includes such measures as the use of aircraft, interceptor missiles, air defense artillery, non-air defense weapons in an air defense role, and countermeasures. (FM101-5-1) p.1-1.

##### Air Defense:

a. All measures designed to nullify or reduce the effectiveness of enemy attack by aircraft or guided missiles in flight. (FM 101-5-1) p. 1-2, (FM 44-1)

b. All defensive measures designed to destroy attacking enemy aircraft or missiles in the earth's envelope of atmosphere, or to nullify or reduce the effectiveness of such attack. (JCS Pub 1, DOD, IADB) p.14.

### Assault:

a. 1. The culmination of an attack which closes with the enemy. 2. In an amphibious operation, the period of time from the crossing of the line of departure by the first scheduled wave to the seizure of the initial objectives. 3. A phase of an airborne or air assault operation beginning with delivery of the assault force into the objective area and extending through the attack of objectives and consolidation of the initial airhead. 4. In river crossings, the period of time from the launching of the first crossing effort until the initial bridgehead has been secured and responsibility passed to the crossing area commander. 5. To make a short, violent, but well-ordered attack against a local objective, such as a gun emplacement or fortified area. (FM 101-5-1) p. 1-6.

b. 1. The climax of an attack; closing with the enemy in hand-to-hand fighting. 2. In an amphibious operation, the period of time between the arrival of the major assault forces of the amphibious task force in the objective area and the accomplishment of the amphibious task force mission. 3. To make a short, violent, but well-ordered attack against a local objective, such as a gun emplacement, a fort, or a machine gun nest. 4. A phase of an airborne operation beginning with delivery by air of the assault echelon of the force into the objective area and extending through attack of assault objective and consolidation of the initial airhead. (JCS Pub 1) p. 37.

c. The assault is the actual overrunning and seizing of an occupied enemy position. (FM 71-1) p. 3-26.

### Assault Echelon:

a. 1. Those forces required in the initial stages of an airborne or air assault operation to secure the assault objectives. 2. One or more units of an attacking force used to begin and lead the attack. (FM 101-5-1) p. 1-7.

b. The element of a force that is scheduled for initial assault on the objective area. (JCS Pub 1). p. 38.

### Assault Force:

a. 1. In an amphibious, airborne, or air assault operation, those units charged with the seizure of the lodgement area. 2. In offensive river crossing operations,

the major subordinate units conducting the assault to, across, and beyond the water obstacle. Assault forces lead, making the initial assault of the river, and continue the advance from the exit bank to the final objectives. 3. Those forces charged with passing through a breach in an enemy fortified position or strongpoint and seizing an objective or completing destruction of the enemy. (FM 101-5-1).

b. The mission of the assault force is to close with and destroy the enemy. (FM 17-15) p.3-28.

#### **Assault Phase:**

a. 1. That phase of an airborne, air assault, amphibious or river crossing operation that begins with the delivery of the assault forces into the objective area and ends when all assault objectives have been seized. 2. That period during an attack which begins and ends when the objective has been seized and consolidated. (FM 101-5-1) p. 1-7.

b. 1. In an amphibious operation, the period of time between the arrival of the major assault forces of the amphibious task force in the objective area and the accomplishment of their mission. 2. In an airborne operation, a phase beginning with delivery by air of the assault echelon of the force into the objective area and extending through attack of assault objectives and consolidation of the initial airhead. (JCS PUB 1) p. 38.

#### **Assembly Area (AA):**

a. An area in which a force prepares or regroups for further action. (FM 101-5-1) p.1-7.

b. 1. An area in which a command is assembled preparatory to further action. (JCS Pub 1), p. 38.

c. ...is a site at which the unit gathers to prepare for future operations. (FM 71-1) p. B-1.

d. ...is an area in which a force prepares for battle. (FM 17-15) p. 2-7.

#### **Attack Position:**

a. The last position occupied or passed through by assault echelon before crossing the line of departure (LD). (FM 101-5-1)

b. The last position occupied by the assault echelon before crossing the line of departure. (JCS Pub 1)

c. The last covered and concealed positions passed through before crossing the LD. (FM 71-2) p. 3-41. (FM 17-15) p. 2-7.

**Axis of Advance:**

a. A general route of advance , assigned for purpose of control, which extends toward the enemy. An axis of advance symbol graphically portrays a commander's intention, such as avoidance of built-up areas or envelopment of an enemy force. It follows terrain suitable for the size of the force assigned the axis and is often a road, a group of roads, or a designated series of locations. A commander may maneuver his forces and supporting fires to either side of an axis of advance provided the unit remains oriented on the axis and the objective. Deviations from an assigned axis of advance must not interfere with the maneuver of adjacent units without prior approval of the higher commander. Enemy forces that do not threaten security or jeopardize mission accomplishment may be bypassed. An axis of advance is not used to direct the control of terrain or the clearance of enemy forces from specific locations. Intermediate objectives normally are assigned for these purposes. (FM 101-5-1) p. 1-8.

b. A line of advance assigned for purposes of control; often a road or a group of roads, or a designated series of locations, extending in the direction of the enemy. (JCS Pub 1), p. 44.

c. ...is used to indicate the general direction of movement of a unit. Commanders must ensure that deviation from the assigned axis of advance does not interfere with the movement or fires of adjacent units. When more than one axis of advance is used, one is designated as the main attack. (FM 71-2) p. 3-40.

d. A line of advance assigned for purposes of control; often a road or a group of roads or a designated series of locations extending in the direction of the enemy. (Janes) p. 24.

e. The general direction of movement of an attacking force...The unit may maneuver to either side of an axis, providing it remains oriented on the axis and objective and does not interfere with other units. (FM 17-15) p.2-8.

### **Base of Fire:**

a. Fire placed on an enemy force or position to reduce or eliminate the enemy's capability to interfere by fire and/or movement of friendly maneuver element(s). It may be provided by a single weapon or a grouping of weapons systems. (FM 101-5-1), p. 1-10.

b. Fire, direct and indirect, placed on the enemy to reduce its capability to interfere with friendly moving elements. (FM 71-1) p. 3-23.

c. ...fire to cover and protect the advance of the moving force. (FM 7-7J) p. 5-21.

### **Battle Drill:**

a. Actions taken by crews, squads, platoons, and companies that are memorized and executed the same way under every condition. (FM 101-5-1) p. 1-10.

b. Collective task at squad or platoon level that has been identified as one of the vital tasks performed by that unit for success in combat. Battle drills are totally or largely METT-T independent, require minimal leader actions to execute, and are standardized for execution throughout the Army. Battle drills are usually executed or initiated on a cue such as a specified enemy action or simple leader order. (ARTEP 7-8-Drill) p. 1-1.

### **Battle Position:**

a. A defensive location oriented on the most likely enemy avenue of approach from which a unit may defend or attack. Such units can be as large as battalion task forces and as small as platoons. A unit assigned a BP is located within the general outline of the BP. Security, combat support and combat service support forces may operate outside a BP to provide early enemy detection and all-around security. (FM 101-5-1) p.1-10,11.

b. ...is a general location and orientation of forces on the ground, from which units defend. The BP can be for units from battalion task force to platoon size. A unit assigned a battle position is within the general area of the position. Security forces may operate well forward and to the flanks of battle positions for early detection on the enemy and for all-round security. Units can maneuver in



and outside of the battle position as necessary to adjust fires or to seize opportunities for offensive action in compliance with the commander's intent. (FM 71-2) p.4-37.

c. ...is a general location on the ground. When given a BP to defend, position the forces on the best terrain in and around the BP. You may position security forces forward of and around the BP. You can also locate CS and CSS elements outside the battle position. Although all positions outside the BP are coordinated with higher, adjacent, and supporting units, you are free to maneuver within the BP. (FM 71-1) p. 4-22.

d. This term applies to an advantageous location, selected on the basis of terrain and weapon systems, from which the unit defense or attacks. (FM 17-15) P.2-8.

#### **Boundary:**

a. A control measure normally drawn along identifiable terrain features and used to delineate areas of tactical responsibility for subordinate units. Within their boundaries, units may maneuver within the overall plan without close coordination with neighboring units unless otherwise restricted. Direct fire may be placed across boundaries on clearly-identified enemy targets without prior coordination, provided friendly forces are not endangered. Indirect fire also may be used after prior coordination. (FM 101-5-1) p.1-11,12.

b. In land warfare, a line by which areas of responsibility between adjacent units/formations are defined. (JCS Pub 1), p. 56.

c. ...is a line that establishes areas of tactical responsibility. Units may use direct fire against identified enemy targets within other units' boundaries but they cannot use indirect fires or maneuver across a boundary without prior coordination. (FM 17-15) p. 2-8.

#### **Breaching Force:**

a. During an attack of an enemy fortified position or strongpoint, the breaching forces are those elements charged with breaching obstacles along an avenue of approach. Breaching forces clear enemy trenches, bunkers and foxholes and create and hold open a breach in the enemy positions. (FM 101-5-1), p. 1-12.

b. The essential capability of the breaching force is the reduction or removal of obstacles...the breaching force cuts through the obstacle and opens lanes in each successive layer of the obstacle. (FM 71-1) p. 3-41.

c. (breaching element) ...mission is to move forward under the cover of direct and indirect fire, breach the obstacles and secure the far side. (FM 7-7J)

**Canalize:**

a. To restrict operations to a narrow zone by use of existing or reinforcing obstacles or by direct or indirect fires. (FM 101-5-1), p. 1-13.

b. To restrict operations to a narrow zone by use of existing or reinforcing obstacles or by fire or bombing. (JCS Pub 1), p. 60.

**Check fire:**

a. A command to cause a temporary halt in firing. (FM 101-5-1) p. 1-13.

b. In artillery and naval gunfire support, a command to cause a temporary halt in firing. (JCS Pub 1), p. 65.

**Checkpoint:**

a. A predetermined point on the ground used as a means of coordinating friendly movement. Checkpoints are not used as reference points in reporting enemy locations. (FM 101-5-1), p.1-13.

b. 1. A predetermined point on the surface of the earth used as a means of controlling movement, a registration target for fire adjustment, or reference for location. 2. Center of impact; a burst center. 3. Geographical location on land or water above which the position of an aircraft in flight may be determined by observation or by electrical means. 4. A place where military police check vehicular or pedestrian traffic in order to enforce circulation control measures and other laws, orders and regulations. (JCS Pub 1). p.65.

c. ...provide the commander the capability of rapidly shifting fires and reorienting maneuver forces by using recognizable terrain features. (FM 71-2) p. 3-42.

d. ...is a designated, easily identifiable point used to control friendly movement. (FM 17-15) p. 2-9.

**Contain:**

a. To restrict enemy movement by stopping, holding, or surrounding his forces or causing them to center their activity on a given front to prevent the movement of any part of his forces for use elsewhere. The limits of the containment may be expressed in terms of geography or time. (FM 101-5-1), p. 1-19.

b. To stop, hold, or surround the forces of the enemy or to cause the enemy to center activity on a given front and to prevent his withdrawing any part of his forces for use elsewhere. (JCS Pub 1), p. 85.

**Contingency Plan:**

a. A plan for major events which can reasonably be anticipated in an area of responsibility. (FM 101-5-1), p. 1-19.

b. A plan for major contingencies which can reasonably be anticipated in the principal geographic subareas of the command. (JCS Pub 1), p. 86.

**Coordinated Fire Line (CFL):**

a. A line beyond which conventional surface fire support means (mortars, field artillery, naval gunfire ships) may fire at any time within the zone establishing HQ without additional coordination. It is usually established by bde or division, but may be established by a maneuver battalion. (The term no-fire line is used by other NATO nations for CFL). (FM 101-5-1), p. 1-19.

b. Line beyond which all surface-to-surface fire support assets may fire without additional coordination. A CFL may be established by a maneuver battalion operating independently, but normally is established by bde or higher headquarters. (FM 71-1) p. 6-16.

**Coordinating Point:**

a. A control measure that indicates a specific location for the coordination of fires and maneuver between adjacent units. They usually are indicated whenever a

boundary crosses the forward edge of the battle field, and may be indicated when a boundary crosses report lines or phase lines used to control security forces. (FM 101-5-1), p. 1-20; (FM 17-15) p. 2-9.

b. Designated point at which, in all types of combat, adjacent units/formations must make contact for purposes of control and coordination. (JCS Pub 1), p. 92.

Counterfire(Note: FM 71-2 uses counterbattery fires, no definition):

a. Fire intended to destroy, neutralize, or suppress enemy indirect fire systems. (FM 101-5-1), p. 1-20.

b. Fire intended to destroy or neutralize enemy weapons. Includes counter-battery, counterbombardment, and countermortar fire. (JCS Pub 1), p. 93.

c. [Artillery] Counterfires are used to attack enemy indirect-fire systems, to include mortar, artillery, air defense, missile, and rocket systems. Observation posts and field artillery command and control facilities are also counter fire targets. (FM 6-20) p.2-8.

Covering Fire:

a. Fire used to protect friendly troops from enemy direct fires. (FM 101-5-1), p. 1-21.

b. 1. Fire used to protect troops when they are within range of enemy small arms. 2. In amphibious usage, fire delivered prior to the landing to cover preparatory operations such as underwater demolition or minesweeping. (JCS Pub 1), p. 95.

Deliberate Attack:

a. An attack planned and carefully coordinated with all concerned elements based on thorough reconnaissance, evaluation of all available intelligence and relative combat strength, analysis of various courses of action, and other factors affecting the situation. It generally is conducted against a well-organized defense when a hasty attack is not possible or has been conducted and failed. Replaces coordinated attack. (FM 101-5-1), p. 1-8.

b. A type of offensive action characterized by pre planned coordinated employment of firepower and maneuver to close with and destroy or capture. (JCS Pub 1), p. 108.

c. ...differ from the hasty attack in that they are characterized by precise planning based on detailed information, thorough preparation and rehearsals. Deliberate attacks normally include large volumes of supporting fires, main and supporting attacks, and deception measures. (FM 71-2) p. 3-52.

#### **Direct Fire:**

a. Fire directed at a target that is visible to the aimer or firing unit. (FM 101-5-1), p. 1-25.

b. Gunfire delivered on a target, using the target itself as a point of aim for either the gun or the director. (JCS Pub 1), p. 115.

#### **Direction of Attack:**

a. A specific direction or route that the main attack or the main body of the force will follow. If used, it is normally at bn and lower levels. Direction of attack is a more restrictive control measure than axis of advance, and units are not free to maneuver off the assigned route. It usually is associated with infantry units conducting night attacks, or units involved in limited visibility operations, and in counterattacks. (FM 101-5-1), p. 1-25.

b. A specific direction or route that the main attack or center of mass of the unit will follow. The unit is restricted, required to attack as indicated, and is not normally allowed to bypass the enemy. The direction of attack is used primarily in counterattacks or to insure that supporting attacks make maximal contribution to the main attack. (JCS Pub 1), p. 115.

c. ...is a restrictive control measure used when the task force commander needs to designate a specific direction of attack or to tightly control a plan of attack. A unit must employ the bulk of its combat power along the assigned direction of attack. The unit cannot deviate from it except to maneuver against enemy forces interfering with the advance. A direction of attack -- follows well-defined terrain features such as trails; is used principally in night attacks and counterattacks. (FM 71-2) p. 3-41.

d. ...is a term for the specific route a force will follow. It is used mainly during periods of limited visibility. (FM 17-15) p. 2-10.

#### Dispersion:

a. ...2. The spreading or separating of a force and its installations to reduce vulnerability to enemy action. (FM 101-5-1), p. 1-26.

b. ...3. The spreading or separating of troops, material, establishment, or activities which are usually concentrated in limited areas to reduce vulnerability. (JCS Pub 1), p. 116.

#### Envelopment:

a. An offensive maneuver in which the main attacking force passes around or over the enemy's principal defensive positions to secure objectives to the enemy's rear. (FM 101-5-1) p. 1-30. (JCS Pub 1) p. 133.

b. Avoids the enemy's front, where his forces are most protected and his fires most easily concentrated. Instead, while fixing the defender's attention forward by supporting or diversionary attacks, the attacker maneuvers his main effort around or over the enemy's defenses to strike at his flanks and rear. (FM 100-5) p. 101. (FM 71-3) p. 3-10.

c. Is the preferred form of maneuver...the attacker strikes the enemy's flank or rear. (FM 71-2) p. 3-5.

#### Final Protective Fire (FPF)

a. An immediately available preplanned barrier of direct and indirect fire designed to provide close protection to friendly positions and installations by impeding enemy movement into defensive areas. (FM 101-5-1)

b. An immediately available prearranged barrier of fire designed to impede enemy movement across defensive lines or areas. (JCS Pub 1)

c. FPF's are immediately available planned fires that create a barrier to enemy movement, especially dismounted infantry approaching across defensive lines or areas. These areas are integrated with defensive plans.

The pattern of FPF may be varied to suit the tactical situation. FPF's are drawn to scale on the target overlay. The size of the FPF is determined by the number and type of weapon used to fire the FPF. (FM 71-1) p. 6-13.

d. ...a prearranged wall of direct and indirect fires to stop the enemy's assault. Positioned to destroy enemy assault forces, the FPF lies within the friendly unit's direct-fire range. For a tank platoon, it should be no closer than 900 meters (maximum effective range of the coaxial machine gun).  
(FM 17-15) p. 4-19.

e. The company commander may assign a mortar or artillery final protective fire (FPF) to a platoon. An FPF is a prearranged barrier of fire. A platoon leader must plan the FPF location with his FO and the FSO. It should cover the most threatening dismounted approach. The FPF is planned close to the platoon position, but not close enough to endanger friendly troops...The FPF is essentially fired as a last resort to stop an enemy assault. On order, it is fired continuously until it is ordered stopped. All other platoon weapons fire while the FPF is being fired. (FM 7-7J) p. 6-6.

#### **Fire Support Coordination Line (FSCL):**

a. A line established by the appropriate ground commander to ensure coordination of fire not under his control but which may affect current tactical operations. The FSCL is used to coordinate fire of air, ground or sea weapons systems using any type of ammunition against surface targets. The FSCL should follow well-defined terrain features. The establishment of the FSCL must be coordinated with the appropriate tactical air commander and other supporting elements. Supporting elements may attack targets forward of the FSCL, without prior coordination with ground force commander, provided the attack will not produce adverse surface effects on or to the rear of the line. Attacks against surface targets behind this line must be coordinated with the appropriate ground force commander. (FM 101-5-1), p. 1-32., (JCS Pub 1, DOD, NATO, IADB), p. 146.

b. A line, normally identifiable from the air, beyond which all targets may be attacked by any weapon system (including aircraft and special weapons) without endangering friendly troops or requiring additional coordi-

nation with the establishing headquarters, so long as the effects of the weapon do not fall short of this line. Its purpose is to expedite attacks of targets beyond the line. It is normally established by corps or an independent division. (FM 44-1) p.glossary 7

c. Line beyond which all targets may be attacked by any weapon system without additional coordination, as long as the effects of those fires do not affect personnel short of the line. Normally established on identifiable terrain by corps or independent divisions. (FM 71-1) p. 6-17.

**Fix:**

a. Actions taken to prevent the enemy from moving any part of his forces from a specific location and/or for a specific period of time by holding or surrounding them to prevent their withdrawal for use elsewhere. (FM 101-5-1), p. 1-32.

b. A position determined from terrestrial, electronic, or astronomical data. (JCS Pub 1), p. 147.

c. [the enemy] Involves establishing an overwatch position from which the enemy is suppressed and kept from withdrawing any part of his force for use elsewhere. (FM 7-7J) p. 5-8.

**Free Fire Area (FFA):**

a. A specific designated area into which any weapon system may fire without additional coordination with the establishing headquarters. (FM 101-5-1), p. 1-34.

b. Area in which any weapon system can fire without additional coordination. It is normally established on identifiable terrain by division or higher headquarters. (FM 71-1) p. 6-17

**Frontal attack:**

a. An offensive maneuver in which the main action is directed against the front of the enemy forces, and over the most direct approaches. (FM 101-5-1), p. 1-8. (JCS Pub 1, DOD, NATO), p. 155.

b. Strikes the enemy across a wide front and over the most direct approaches. (FM 100-5) p. 105. (FM 71-3) p. 3-14.



c. Uses most direct routes to strike the enemy along his front. (FM 71-2) p.3-9.

**Gap:**

a. 1. Any break or breach in the continuity of tactical dispositions or formations beyond effective small arms coverage. 2. A portion of a minefield of specified width in which no mines have been laid, to enable a friendly force to pass through the minefield in tactical formation. (FM 101-5-1), p. 157.

b. An area within a minefield or obstacle belt, free of live mines or obstacles, whose width and direction will allow a friendly force to pass through in tactical formation. (JCS Pub 1), p. 1-35.

**Group of Targets:**

a. Two or more targets on which fire is desired simultaneously. A group of targets is designated by a letter-number-letter combination or a nickname. (FM 101-5-1), p. 1-35, (JCS Pub 1), p. 163.

b. Two or more targets on which simultaneous attack is desired by the maneuver commander... A group of targets is portrayed graphically by circling the targets and identifying them with a group designation. The group designation consists of the letters assigned to the supported unit with a number inserted between them. (FM 71-1) p.6-11.

**Hasty Attack:**

a. An offensive operation for which a unit has not made extensive preparations. It is conducted with the resources immediately available in order to maintain momentum or to take advantage of the enemy situation. (FM 101-5-1), p. 1-8.

b. In land operations, an attack in which preparation time is traded for speed in order to exploit an opportunity. (JCS Pub 1), p. 168.

c. ...differs from the deliberate attack only in the amount of time allowed for planning and preparation. The hasty attack is conducted either as a result of a meeting engagement or when bypass has not been authorized and the enemy force is in a vulnerable (unprepared or unaware) position. (FM 71-2) p. 3-49.

### Indirect Fire:

a. Fire delivered on a target which cannot be seen by the firing unit. (FM 101-5-1), p. 1-38, (JCS Pub 1, NATO), p. 182.

b. Fire delivered on a target that is not itself used as a point of aim for the weapons or the director. (JCS Pub 1, DOD, IADB), p. 181.

### Infiltration:

a. 1. The movement through or into an area or territory occupied by either friendly or enemy troops or organizations. The movement is made, either by small groups or by individuals, at extended or irregular intervals. When used in connection with the enemy, it implies that contact is avoided. (FM 101-5-1) p. 1-39. (JCS Pub 1) p. 183.

b. Form of maneuver where combat elements move by stealth to objectives to the rear of the enemy's position without fighting through prepared defenses. (FM 71-2) p. 3-9.

c. Is the covert movement of all or part of the attacking force through enemy lines to a favorable position in their rear. (FM 100-5) p. 103. (FM 71-3) p. 3-11.

### Interdiction Fire:

a. Fire placed on an area or point to prevent the enemy from using the area or point. (FM 101-5-1), p. 1-39., (JCS Pub 1), p. 191.

b. [Artillery] Fires used to disrupt, delay and destroy enemy forces that, because of range limitations or intervening terrain, cannot fire their primary weapons systems on friendly forces. (FM 6-20) p.2-8.

### Limit of Advance:

a. An easily recognized terrain feature beyond which attacking elements will not advance. (FM 101-5-1), p. 1-42.

b. ...Is the control measure used to stop the forward progress of attacking units; it does not restrict fires. (JCS PUB 1), p. 1-42.

c. ...is a recognizable feature beyond which attacking elements will not advance. (FM 17-15) p. 2-10.

#### **Main Attack:**

a. The principal attack or effort into which the commander places the bulk of the offensive capability at his disposal. An attack directed against the chief objective of the campaign or battle. (FM 101-5-1), p. 1-8.

b. The principal attack or effort into which the commander throws the full weight of the offensive power at his disposal. An attack directed against the chief objective of the campaign or battle. (JCS Pub 1, DOD, NATO, IADB), p. 218.

c. The task force's main effort at the decisive phase of the attack. (FM 71-2) p. 3-25.

#### **Maneuver:**

a. The movement of forces supported by fire to achieve a position of advantage from which to destroy or threaten destruction of the enemy. (FM 101-5-1) p. 1-44.

b. ...3. The operation of a ship, aircraft, or vehicle, to cause it to perform desired movements. 4. Employment of forces on the battlefield through movement in combination with fire, or fire potential, to achieve a position of advantage in respect to the enemy in order to accomplish the mission. (JCS Pub 1) p. 220.

c. ...is the movement of forces in relation to the enemy to secure or retain positional advantage. (FM 100-5) p. 12.

d. ...the task force destroy enemy forces and seize and hold terrain. (FM 71-2) p. 1-11.

#### **Meeting Engagement:**

a. A combat action that occurs when a moving force, incompletely deployed for battle, engages and enemy at an unexpected time and place. The enemy force may be either stationary or in motion. (FM 101-5-1), p. 1-46. (JCS Pub 1), p. 227.

b. ...is the initial contact that occurs when a task force not completely deployed for battle encounters an enemy force on which little information is known. The enemy may be moving or stationary. (FM 71-2) p. 3-48.

#### Mission:

a. 1. The primary task assigned to an individual unit, or force. It usually contains the elements of who, what, when, where and the reason therefore, but seldom specifies how. 2. The dispatching of one or more aircraft to accomplish one particular task. (FM 101-5-1) p. 1-47.

b. 1. The task, together with the purpose, which clearly indicates the action to be taken and the reason therefore... (JCS Pub 1, DOD, IADB) p. 236.

c. 1. A clear, concise statement of the task of the command and its purpose. (JCS Pub 1, NATO) p. 236.

#### Movement to Contact:

a. An offensive operation designed to gain initial ground contact with the enemy or to regain lost contact. (FM 101-5-1), p. 1-49.

b. An offensive operation designed to gain or regain contact with the enemy. (FM 71-1) p. 3-18.

#### Neutralization Fire:

a. Fire that is delivered to hamper and interrupt movement and/or the firing of weapons. (FM 101-5-1), p. 1-49, (JCS Pub 1, NATO), p. 249.

b. Fire which is delivered to render the target ineffective or unusable. (JCS Pub 1, DOD, IADB), p. 249.

c. [Artillery] Neutralization knocks a target out of action temporarily...Most missions are neutralization fire. (FM 6-20) p.2-7.

d. ...a target puts the target out of the battle temporarily. It will become effective again when casualties are replaced and the damage is repaired. (FM 71-1) p. 2-34.

### No-Fire Area (NFA):

a. An area in which no fires or effects of fires are allowed. Two exceptions are (1) when establishing headquarters approves fires temporary within the NFA on a mission basis and (2) when the enemy force within the NFA engages a friendly force, the commander may engage the enemy to defend his force. (FM 101-5-1), p. 1-50.

b. An area in which no fires or their effects may be delivered except on a mission-by-mission basis after coordinating with the establishing headquarters. Fires are allowed if friendly forces are attacked by the enemy and if in the opinion of the senior soldier on site, there is no time to coordinate with the establishing headquarters. An NFA is normally established by division or higher headquarters. (FM 71-1) p. 6-18.

### Objective:

a. 1. The physical object of the action taken (for example, a definite terrain feature, the seizure and/or holding of which is essential to the commander's plan, or, the destruction of an enemy force without regard to terrain feature). 2. The principle of war which states that every military operation should be directed towards clearly defined, decisive, and attainable objectives. (FM 101-5-1), p. 1-50.

b. The physical object of the action taken, e.g. a definite tactical feature, the seizure and/or holding of which is essential to the commander's plan. (JCS Pub 1, DOD, NATO, IADB), p. 259.

c. ...is the physical objective or area to be seized or taken. It may be enemy personnel, terrain a manmade object or some other goal. (FM 17-15) p. 2-11.

### Observed Fire:

a. Fire for which the points of impact or burst can be seen by an observer. The fire can be controlled and adjusted based on observations. (FM 101-5-1), p. 1-51. (JCS Pub 1, DOD, NATO, IADB), p. 259.

b. [Artillery] Fire for which the points of impact or burst can be controlled by an observer. (FM 6-20) p.2-8.

### Overwatch:

a. 1. A tactical technique in which one element is positioned to support the movement of another element with immediate direct fire. 2. The tactical role of an element positioned to support the movement of another element with immediate direct fire. (FM 101-5-1), p. 1-54.

b. ...mission supports the movement of other elements by direct fire or adjusting indirect fire on enemy forces that can engage the supported unit. (FM 71-2) p. 3-27. Overwatch positions are usually indicated graphically as checkpoints. (FM 71-2) p. 3-41.

c. ...observe[s] friendly movement and respond with immediate suppression of enemy positions engaging the moving element. If the enemy is not visible and does not engage the moving force, the overwatch element does not necessarily fire. (FM 71-1) p. 3-23.

### Passage Lanes:

a. Areas along which a passing unit moves to avoid stationary units and obstacles. (FM 101-5-1) p. 1-54.

b. The route along which passing units move forward or rearward to avoid stationary units and obstacles is the passage lane. (FM 17-15) p. 2-11.

### Passage Point:

a. A place where units will pass through one another either in an advance or withdrawal. It is located where the commander desires subordinate units to physically execute a passage of lines. (FM 101-5-1) p. 1-54.

b. ...is a place where units physically pass through one another. (FM 17-15) p. 2-12.

### Penetration:

a. A form of offensive maneuver that seeks to break through the enemy's defensive position, widen the gap created, and destroy the continuity of his positions. (FM 101-5-1), p. 1-55.

b. In land operations, a form of offensive which seeks to break through the enemy's defense and disrupt the defensive systems. (JCS Pub 1, DOD, NATO, IADB), p. 275.

c. Attempts to rupture enemy defenses on a narrow front and thereby create both assailable flanks and access to the enemy's rear. Penetrations typically comprise three stages: initial rupture of enemy positions, roll-up of the flanks on either side of the gap and exploitation to secure deep objectives. (FM 100-5) p. 105.

d. [At battalion level] concentrates its force to rupture the defense on a narrow front, normally a platoon. The gap created is then widened and used to pass forces through to defeat the enemy in detail and to seize objectives in depth... A penetration is planned in three phases: (a) Isolation of the site selected for penetration...(b) Initial penetration of the enemy position...(c) Exploitation of the penetration. (FM 71-2) p. 3-9.

#### Phase Line:

a. A line used for control and coordination of military operations. It is usually a recognizable terrain feature extending across the zone of action. Units normally report crossing PLs but do not halt unless specifically directed. PLs often are used to prescribe the timing of delay operations. (FM 101-5-1), p.1-55.

b. A line utilized for control and coordination of military operations, usually a terrain feature extending across the zone of action. (JCS Pub 1, DOD, NATO, IADB), p. 276.

c. ...extends across the zone of action of the task force. Phase lines are established to control and coordinate maneuver to coordinate fires with maneuver, and to assist in executing contingency plans. (FM 71-2) p. 3-41.

d. A linear control measure normally used to control movement. It can also be used to control and distribute the fire of several widely separated BFV's. Any prominent natural or man-made linear terrain feature...can be used as a phase line. (FM7-7J) p. c-7.

e. ...drawn along a recognizable terrain feature, is used for control and coordination of maneuver forces. Units normally report when they cross a phase line. (FM 17-15) p. 2-12

### **Point of Departure:**

a. In night attacks, a specific place on the line of departure (LD) where a unit will cross. (FM 101-5-1), p. 1-55.

b. In limited-visibility operations, the point of departure is a specific place on the line of departure where a unit will cross. (FM 17-15) p. 2-12.

### **Preparation Fire:**

a. Fire delivered on targets preparatory to an assault. The preparation is planned by a direct support (DS) field artillery battalion or higher echelon. It is an intense volume of fire delivered in accordance with a time schedule. The fires normally commence prior to H-hour and may extend beyond it. They may start at a prescribed time or be held on-call. The duration of the preparation is influenced by factors such as the fire support needs of the entire force, number of targets and firing assets, and available ammunition. (FM 101-5-1), p. 1-56.

b. Fire delivered on a target preparatory to an assault. (JCS Pub 1, DOD, NATO, IADB), p. 283.

### **Restrictive Fire Area (RFA):**

a. An area in which specific restrictions are imposed and into which fires that exceed those restrictions may not be delivered without prior coordination with the establishing headquarters. (FM 101-5-1), p. 1-62.

b. An area with specific restrictions. Fires that exceed those restrictions will not be delivered without coordinating with the establishing headquarters. An RFA is normally established by bn or higher headquarters. (FM 71-1) p. 6-18.

### **Restrictive Fire Line (RFL):**

a. A line established between converging friendly forces (one or both may be moving) that prohibits fires or effects from fires across the line without coordination with the affected force. It is established by the commander of the converging forces. (FM 101-5-1), p. 1-62.



b. A line between two converging friendly forces. No fires or effects of fires (direct or indirect) can be executed across an RFL without coordinating with the affected forces. An RFL is normally established on identifiable terrain by the commander common to the converging forces. (FM 71-1) p. 6-18.

**Sector of Fire:** (Note: FM 71-1 had no definition)

a. "An area which is required to be covered by fire, by and individual, a weapon or a unit." (JCS Pub 1, DOD, NATO, IADB) p. 326., (FM 101-5-1), p. 1-64.

b. "A specific area can be assigned to a unit or a weapon. Each unit should be assigned one primary sector and an on-order or secondary sector of fire." (FM 71-2), p. 4-21.

c. "is the area where a tank has primary responsibility for acquiring and engaging the enemy." (FM 17-15), p. 4-17.

d. "... a specific, clearly identified area to cover." (FM 7-7J), p. C-4.

**Secure:**

a. In an operational text, to gain possession of a position or terrain feature, with or without force, and to make such disposition as will prevent, as far as possible, its destruction or loss by enemy action. (JCS Pub 1, DOD, NATO, IADB), p. 326.

b. To gain possession of a position or terrain feature, with or without force and to deploy in a manner which prevents its destruction or loss to enemy action. (FM 101-5-1), p.1-64.

**Series of Targets:**

a. In fire support, a number of targets and/or group(s) of targets planned in a predetermined time sequence to support a maneuver phase. A series of targets is indicated by a code name or nickname. (FM 101-5-1), p. 1-65.

b. In Artillery and naval gunfire support, a number of targets and/or group(s) of targets planned to support a maneuver phase. A series of targets may be indicated by a nickname. (JCS Pub 1, NATO), p. 329.

c. Is a number of targets or groups of targets planned to be fired in a predetermined time sequence to support the scheme of maneuver. A series may be either on-call or scheduled...The direct-support battalion is the lowest level authorized to designate a series of targets. A series is shown graphically as individual targets or groups of targets within a circular area. The series is given a code name by the direct support field artillery battalion. (FM 71-1) p. 6-11.

#### **Spoiling Attack:**

a. A limited-objective attack made to delay, disrupt, or destroy the enemy's capability to launch an attack. (FM 101-5-1), p. 1-8.

b. A tactical maneuver employed to seriously impair a hostile attack while the enemy is in the process of forming or assembling for an attack. Usually employed by armored units in defense by an attack on enemy assembly positions in front of a main line of resistance or battle position. (JCS Pub 1, DOD, IADB), p. 341.

#### **Supporting Attack:**

a. An attack designed to hold the enemy in position, to deceive him as to where the main attack is being made to prevent him from reinforcing the elements opposing the main effort, and/or to cause him to commit his reserves prematurely at an indecisive location. (FM 101-5-1), p. 1-8.

b. An offensive operation carried out in conjunction with a main attack and designed to achieve one or more of the following: deceive the enemy; destroy or pin down enemy forces which could interfere with the main attack; control ground whose occupation by the enemy will hinder the main attack; or force the enemy to commit reserves prematurely or in an indecisive area. (JCS Pub 1, DOD, NATO, ), p. 355.

#### **Support(ing) Fire:**

a. Those forces charged with providing intense direct overwatching fires to the assault and breaching forces. (FM 101-5-1), p. 1-68.

b. Fire delivered by supporting units to assist or protect a unit in combat. (JCS Pub 1, DOD, NATO, IADB), p. 356.

### Suppression:

a. Direct and indirect fires, electronic countermeasures (ECM) or smoke brought to bear on enemy personnel, weapons, or equipment to prevent effective fire on friendly forces. (FM 101-5-1), p. 1-68.

b. Temporary or transient degradation of the performance of a weapons system, below the level needed to fulfill its mission objectives, by and opposing force. (JCS Pub 1, DOD), p. 356.

c. [Artillery] Suppression of a target limits the ability of the enemy personnel in the target area to perform their jobs. (FM 6-20) p.2-8.

d. Suppressing a target prevents it from placing effective fire on friendly forces. The effect of suppressive fires usually lasts only as long as the fires are continued. (FM 71-1) p. 2-34.

### Target

a. 1. A geographical area, complex, or installation planned for capture or destruction by military forces. 2. In intelligence usage, a country, area, installation agency, or person against which intelligence operations are directed. 3. An area designated and numbered for future firing. Target symbols and the target numbering system are found in FM 6-20. 4. In artillery and naval gunfire support, an impact burst which hits the target. (FM 101-5-1), p. 1-70. (JCS Pub 1, DOD, NATO, IADB), p. 364.

b. [Standard Target] is an area approximately 100m in radius. The symbol for a standard target is a cross. It may be canted if several targets are close to each other or when the symbol might be confused as a grid intersection. The intersection of the lines marks the center of the target. (FM 71-1) p. 6-9.

### Target Overlay:

a. An overlay showing the locations of friendly artillery units, targets, boundaries and fire support coordination measures. It enables the fire support coordinator to view graphically all targets planned in support of the maneuver force and to determine the best fire support agency to engage the listed targets. (FM 101-5-1), p. 1-71.

b. A transparent sheet which, when superimposed on a particular chart, map, drawing, tracing or other representation, depicts target locations and designations. The target overlay may also show boundaries between maneuver elements, objectives and friendly forward dispositions. (JCS Pub 1, DOD, NATO), p. 366.

**Target Reference Point (TRP):** (Note: JCS Pub 1 and FM 71-1 had no definition for TRP)

a. "An easily recognizable point on the ground (either natural or manmade) used for identifying enemy targets or controlling fires. TRP's are usually designated by the company commanders or platoon leaders for company teams, platoons, sections, or individual weapons. They can also designate the center of an area where the commander plans to distribute or converge the fires of all his weapons rapidly. TRP's are designated by using the standard target symbol and target numbers issued by the fire support team (FIST) or fire support officer (FSO). Once designated, TRP's also constitute indirect fire targets." (FM 101-5-1), p. 1-71.

b. "An easily recognizable point on the ground, either natural or man-made, used for identifying targets and controlling direct fire and indirect fires. TRP's are designated to rapidly distribute or mass fires. A TRP is designated using a standard target symbol and target number issued either by the FSO or IAW SOP. Once designated TRP's Also constitute indirect fire targets." (FM 71-2), p. 4-20.

c. "An easily recognizable point on the ground used primarily for locating enemy forces or controlling direct and indirect fires. It can designate the center of an area where a platoon can mass its fire or the limits of such an area. A TRP can be an existing terrain feature or a manmade object. TRP's are numbered using target numbers issued by the fire support team (FIST)." (FM 17-15), p. 2-13.

d. "A TRP is used to designate targets of opportunity, shift fire, or assign sectors of fire...Each TRP is given an identification number by the platoon forward observer." (FM 7-7J), p. C-6.

**Turning Movement:**

a. A variation of an envelopment in which the attacking force passes around or over the enemy's principal defensive positions to secure objectives that are deep in

the enemy's rear. In doing so, it forces the enemy to abandon his positions, to divert major forces to meet the threat, and to fight in two directions simultaneously. (FM 101-5-1) p. 1-73.

b. A variation of the envelopment in which the attacking force passes around or over the enemy's principal defensive positions to secure objectives deep in the enemy's rear to force the enemy to abandon his position or divert major forces to meet the threat. (JCS Pub 1) p. 381.

c. A variant of the envelopment in which the attacker attempts to avoid the defense entirely, instead seeking to secure key terrain deep in enemy's rear and along his lines of communication. (FM 100-5) p. 102.

d. A large scale envelopment in which the attacking force passes over and around enemy defense to secure objectives deep in the enemy's rear. (FM 71-3) p. 3-11.

e. A variant of the envelopment in which the attacker seeks to pass around the enemy, avoiding his main forces, to secure an objective deep in the rear. (FM 71-2) p.3-6.

#### Weapons Free.

a. Weapons may be fired at any aircraft not positively identified as friendly. This is the least restrictive of the weapons controls. (FM 101-5-1) (FM 7-7J) p.8-13. (FM 44-1) p.5-14; (FM 71-1) p. 6-39.

b. In air defense, a weapon control order imposing a status whereby weapons systems may be fired at any target, not positively recognized as friendly. (JCS Pub 1, DOD, NATO), p. 396.

#### Weapons Hold:

a. Weapons are not to be fired except in self-defense. (FM 101-5-1)(FM 7-7J) p.8-13.

b. In air defense, a weapon control status used to indicate the weapons systems may be fired only in self-defense or in response to a formal order. (JCS Pub 1, DOD, NATO), p. 396.

c. A weapons control status ... [that states] do not fire except in self-defense or in response to a formal order. This is the most restrictive weapons control status. (FM 44-1) p. 5-15. (FM 71-1) p. 6-39.

#### **Weapons Tight:**

a. Weapons may be fired only at aircraft positively identified as hostile according to the prevailing hostile criteria. (FM 101-5-1) (FM 44-1) p. 5-15. (FM 71-1) p. 6-39.

b. In air defense, a weapon control order imposing a status whereby weapons systems may be fired only at targets recognized as hostile. (JCS Pub 1, DOD, NATO), p. 396.

c. Weapons may be fired only at aircraft positively identified as hostile according to the announced hostile criteria. (FM 7-7J) p. 8-13.

#### **Zone of Action:**

a. A tactical subdivision of a larger area, the responsibility for which is assigned to a tactical unit; generally applied to offense action. (FM 101-5-1), p. 405. (JCS Pub 1, DOD, NATO, IADB), p. 1-75.

b. ...is defined by boundaries and is the unit's area of operation. (FM 71-2) p. 3-40.

### **SECTION II: TERMS NOT DEFINED IN FM 101-5-1**

**Area Fire:** Fire distributed over a larger area when enemy positions are more numerous or less obvious. All weapons are fired at the target. (One of two types of fire that the base-of-fire element can deliver in support of the moving force.) (FM 7-7J) p. 5-23.

#### **Area Target:**

a. A target consisting of an area rather than a single point. (JCS Pub 1), p. 34.

b. Area targets require fire distribution laterally and in-depth. The wider the area, the less concentrate the

fires become. area targets are designated by EA's and sectors of fire established by TRP's. (FM 71-1) p. 2-35.

#### **Assault Fire:**

a. 1. That fire delivered by attacking troops as they close with the enemy. 2. In artillery, extremely accurate, short-range destruction fire at point targets. (JCS Pub 1), p. 38.

b. ...is employed when the platoon is assaulting the enemy. All weapons are used in assault fire. (FM 17-15) p. 2-55.

#### **Attack by Fire:**

a. This mission requires engaging an enemy force with direct fire to destroy, fix, or suppress it. Positions and sectors of fire or other fire control measures can be assigned. (FM 71-2) p. 3-27.

b. the purpose is to destroy the enemy from a distance. (FM 17-15) p. 3-32.

c. This mission requires engaging an enemy force with fires (direct and indirect) to achieve destruction, neutralization or suppression effects. (author)

#### **Attack by Fire Position**

a. ...is used to designate the position from which fires are placed on an objective or into an engagement area. (FM 71-2) p. 3-41.

b. ... is used to designate the position from which the identified direct fire systems/unit can conduct their attack-by-fire mission. (Author)

**Barrage Fire:** Fire which is designed to fill a volume of space or area rather than aimed specifically at a given target. (JCS Pub 1), p. 46.

**Call Fire:** Fire delivered on a specific target in response to a request from the supported unit. (JCS Pub 1), p. 59.

### Cease Engagement:

a. A command that weapons will disengage a particular target or targets and prepare to engage another target. Missiles in flight will continue to intercept. The order terminates engagement on a particular target. (JCS Pub), p. 62.

b. This command is used to stop tactical action against a specified target and is always followed by an Engage command. This order may be used to change an ongoing engagement of one target to another of higher priority. Missiles in flight are allowed to continue to intercept. (FM 44-1)p.5-15.

### Cease Fire:

a. A command given to air defense artillery units to refrain from firing on, but to continue to track, an airborne object. Missiles already in flight will be permitted to continue to intercept. (JCS Pub 1, DOD, IADB) P. 62. (FM 44-1) p. 5-15.

b. A command given to units to refrain from firing on but continue to observe/track, a given target(s). Missiles already in flight will be permitted to continue to intercept. (author)

Clear(This term is used as in "clear the woodline"): No definition.

### Close Supporting Fire

a. Fire placed on enemy troops, weapons, or positions which, because of their proximity present the most immediate and serious threat to the supported unit. (JCS Pub 1), p. 70.

b. [Artillery] Fires use to engage enemy troops, weapons, or positions that are threatening or can threaten the force in either the attack or the defense. (FM 6-20) p.2-8.

Concentrated Fire: Fire from a number of weapons directed at a single point or small area. (JCS Pub 1), p. 83.

Contingent Zone of Fire: An area within which a designated ground unit or fire support ship may be called upon to deliver fires. (JCS Pub 1), p. 86.



**Continuous Fire:** 1. Fire conducted at a normal rate without interruption for application of adjustment corrections or for other causes. 2. In field artillery and naval gunfire support, loading and firing at a specified rate or as rapidly as possible consistent with accuracy within the prescribed rate of fire for the weapon. Firing will continue until terminated by the command end of mission or temporary suspended by the command cease loading or check firing. (JCS Pub 1), p. 87.

**Co-ordinated attack:** No definition.

**Counterreconnaissance:**

a. All measures taken to prevent hostile observation of a force, area, or place. (JCS Pub 1) p. 94.

b. ...consists of active measures designed to detect, fix, and destroy, as well as passive measures designed to conceal, deceive, and confuse enemy reconnaissance elements. (FM 71-3) p. 4-16.

**Cover:**

a. [In air defense] This command is used to order a fire unit to assume a posture that will allow engagement of a target if directed...This order can be used for targets that are presently being engaged by another fire unit or for targets that have yet to become a significant threat. (FM 44-1) p. 5-15.

b. (used in 71-1, as to "cover entrances and exits, AoA, with wpn sys.etc) (FM 71-1) p. b-9, (FM 7-7J) p. 5-21. but not defined.

**Crossfire:**

a. ...is used when targets are dispersed laterally and when obstructions prevent all BFV's from firing to the front. Crossfire is also used to get flank shots...Each BFV engages a target on a diagonal to its position with flank BFV's engaging targets on the opposite flank. As targets are destroyed, fire is shifted to the center of the enemy formation. (FM 7-7J) p. C-10.

b. ...is employed when the enemy is exposed laterally but obstructions prevent all tanks from firing to the front. The left-most tank engages the right-most target.

The right-most tank engages the left-most target. The two center tanks engage targets diagonal to their own positions. When targets are destroyed, fires are shifted toward the center of the enemy formation. (FM 17-15) p. 2-42

c. Is a direct fire pattern used when the enemy is exposed laterally but obstructions prevent all systems from firing to the front or when flanking fires are trying to be achieved. The flank direct fire systems engage the opposite flank targets while the center direct fire systems engage targets diagonal to their own positions. When targets are destroyed, direct fires are shifted toward the center of the target or enemy formation. (author)

**Defeat:** May or may not entail the destruction of any part of the enemy army; rather, the objective is to either disrupt or nullify his plan and/or subdue his will to fight so that he is either unwilling or unable to further pursue his adopted course of action. (FM 100-15) p. 5-2.

**Depth Fire:**

a. ...is used when the enemy is exposed in column. The left-most tank engages the rear target, then shifts its fire toward the center of the enemy formation. The tank second from the left engages a center target, then shifts fire toward the rear of the enemy formation. The right-most tank also engages a center target, then shifts fire toward the front of the enemy formation. The tank second from the right engages the front target, then shifts fire toward the center of the enemy formation. (FM 17-15) p. 2-43.

b. ... is used when targets are exposed in depth. BFV's on one side engage the nearest targets, while BFV's on the other side engage the farthest targets. Fire is then shifted toward the center of the formation. (FM 7-7J) p. C-10.

c. A direct fire pattern used against targets exposed in depth. The commander will designate which direct fire systems will engage the farthest targets and the nearest targets. As targets are destroyed, direct fires are shifted toward the center of the target or enemy formation. (author)

**Destroy(ing)/Destruction:** (Note: FM 71-2 uses but does not define it)

a. Destroying a target means putting it permanently out of action. (FM 71-1) p. 2-34.

b. Destruction of the enemy force renders it combat ineffective unless reconstituted. A unit tasked with destroying an enemy force must be adequately weighted to afford it the capability to concentrate overwhelming combat power against that enemy forces. (FM 100-15) p. 5-2.

**Destruction Fire**

a. Fire delivered for the sole purpose of destroying material objects. (JCS Pub 1), p. 113.

b. [Artillery] Destruction puts a target out of action permanently. (FM 6-20) p.2-7.

**Disrupt:** No definition.

**Eliminate(s):** (As in eliminate resistance): No definition.

**Engage:**

a. In air defense, a fire control order used to direct or authorize units and/or weapon systems to fire on a designated target. (JCS Pub 1), p. 133.

b. Used to order a fire unit to engage (fire on) a specific target. This order cancels any previous fire control order which may have been given on that track. (FM 44-1) p.5-15.

c. A fire control order used to direct or authorize units and/or weapon systems to fire on a designated target. (author)

**Engagement Control:** In air defense, that degree of control exercised over the operational functions of an air defense unit that are related to detection, identification, engagement, and destruction of hostile targets. (JCS Pub 1) p133.

**Fire(s)** (Manuals use this term to apply to both direct and indirect fires but often fail to differentiate.): The command given to discharge a weapon(s). 2. detonate the main explosive charge by means of a firing system. (JCS Pub 1), p. 145.

**Fire Control:** The control of all operations in connection with the application of fire on a target. (JCS Pub 1), p. 145.

**Fire Plan:** A tactical plan for using the weapons of a unit or formation so that their fire will be coordinated. (JCS Pub 1), p. 146.

**Flanking Fire:** No definition.

**Frontal Fire:** (Note: FM 71-2 uses the term but doesn't define it)

a. ...is used when the enemy is dispersed laterally in relation to the platoon and all tanks are firing to the front. The left-most tank engages the left-most target. The right most tank engages the right-most target. The two center tanks engage targets to their direct front. When targets are destroyed, fires are shifted toward the center of the enemy formation. (FM 17-15) p. 2-41.

b. ...is used when targets are dispersed laterally to the platoon's direction of fire. Each BFV shoots targets to its front, with flank BFV's engaging flank targets first. As targets are destroyed, fire is shifted toward the target center of the enemy formation. (FM 7-7J) p. C-8,9.

c. is a direct fire pattern used against a target(s) that is laterally dispersed to the units direction of fire. Flank direct fire systems engage flank targets first with center direct fire systems engaging targets to their immediate front. As targets are destroyed, fire is shifted toward the target center. (author)

**Ground Fire:** Small arms ground-to-air fire directed against aircraft. (JCS Pub 1), p. 162.

### **Harassing Fire**

a. Fire designed to disturb the rest of the enemy troops, to curtail movement and, by threat of losses, to lower morale. (JCS Pub 1), p. 167.

b. Are delivered on confirmed as suspected enemy locations for the purpose of disturbing the rest, curtailing the movement, and lowering the morale of enemy troops by the threat of casualties or loss of equipment. (FM 71-2) p. 6-14.

**Hold:** ...2. To maintain or retain possession of by force, as a position or an area. 3. In an attack to exert sufficient pressure to prevent movement or redispotion of enemy forces. (JCS Pub 1), p. 172.

**Hold Fire:**

a. Do not open fire, or cease firing on raid/track designated. Missiles in flight must not be permitted to continue to intercept raid/track designated. (Note: This is an emergency order that temporarily terminates the active status of antiair warfare weapons on raid/track designated.) (JCS Pub 1), p. 172.

b. An emergency fire control order used to stop firing and all tactical action to include the destruction of any missiles in flight. This order may be used to protect friendly aircraft. (FM 44-1) p. 5-15.

**Killing Zone:** (used in FM 7-7J p.7-37 not defined): (Author proposed definition: An area in which a commander plans to force the enemy to concentrate so as to destroy him with conventional weapons or the tactical employment of nuclear weapons.) (JCS Pub 1), p. 203.

**Limit of Fire:** 1. The boundary marking off the area on which gunfire can be delivered. 2. Safe angular limits for firing at aerial targets. (JCS Pub 1) p. 211.

**Marking Fire:** Fire placed on a target for the purpose of identification. (JCS Pub 1), p. 224.

**Mask:**(as in mask ones fires): No definition.

**Mutual Support:**

a. That support which units render each other against an enemy, because of their assigned tasks, their position relative to each other and to the enemy, and their inherent capabilities. (JCS Pub 1), p. 242.

b. The characteristic of a defense achieved by positioning individual fire units so that effective fires can be delivered into the dead zone surrounding an adjacent fire unit resulting from weapon system characteristics. (FM 44-1)p.glossary 8.

c. Is the support that units render to each other because of their assigned tasks, relative positions (to each other and the enemy), and inherent capabilities. (FM 71-1) p. 6-21.

**No-Fire Line:** A line short of which artillery or ships do not fire except on request or approval of the supported commander, but beyond which they may fire at any time without danger to friendly troops. (JCS Pub 1, DOD, NATO), p. 249.

**Nullify** (as in nullify the enemies fires): No definition.

**Obscuration Fire:** ...this category of firepower uses smoke and WP ammunition to isolate the enemy and obscure his view of the battlefield. (FM 71-2) p. 6-14.

**Overlapping Fires:** The characteristic of a defense achieved by positioning ADA weapons so that engagement envelopes overlap. (FM 44-1) p. glossary 8.

**Point Fire:** Fire directed against a specific identified target, such as a machine gun or ATGM position. All weapons are fired at the target. (One of two types of fire that the base-of-fire element can deliver in support of the moving force.) (FM 7-7J) p. 5-23.

**Point Target:**

a. A point target requires fires to converge on a particular target and achieve concentration of fire. Point targets are normally designated by shifting from TRP's. (FM 71-1) p. 2-34.

**Protect:** (As in protect my flank, provide protective fires): No definition.

**Rehearsal:** (What is it? Is a brief back a rehearsal?): No definition.

**Scheduled Fire:** A type of prearranged fire executed at a predeternined time. (JCS Pub 1, DOD, NATO, IADB), p. 322.

**Schedule of Fire:** Groups of fires or series of fires fired in a definite sequence according to a definite program. The time of starting the schedule may be on call. For identification purposes schedules may be referred to by a code name or other destination. (JCS Pub 1, DOD, NATO), p. 322.

**Screening Fire:** Involves the use of smoke and WP...used to mask friendly maneuvering elements in order to disguise the nature of their operations. (FM 71-2) p. 6-14.

**Shifting Fire:** Fire delivered at constant range at varying deflections; used to cover the width of a target that is too great to be covered by an open sheaf. (JCS Pub 1, DOD, IADB), p. 331.

**Stop Fire:** [In air defense] An emergency fire control order to temporarily halt the engagement sequence due to internally unsafe fire unit conditions...This command can be given by anyone in the fire unit who detects an unsafe condition. The engagement continues after the unsafe condition has been corrected. (FM 44-1) p. 5-15.

**Stream of Fire:** (FM 7-7J) p. 6-38: No definition.

**Strikes:** (Used in FM 100-5, p101; FM 71-2 p 3-5. As in team B strikes the enemy): No definition.

**Support-by-Fire:** ...is used to kill or suppress an enemy position, permitting other elements to move, assault, or withdraw. (FM 17-15) p. 2-55.

**Support-by-Fire Element:** ...primary mission is to destroy as much of the enemy as possible by long-range fires before the assault. The element uses direct and indirect fires to prevent the enemy from engaging the assault force or from adjusting his position to counter the assault force. (FM 17-15) p. 3-27.

**Synchronization:**

a. The arrangement of battlefield activities in time, space and purpose to produce maximum relative combat at power at the decisive point...[it] is both a process and a result. (FM 100-5), p. 17.

b. The process of integrating the activities on the battlefield to produce the desired result. (FM 71-2) p.1-6.

**Target Discrimination:** The ability of a surveillance or guidance system to identify or engage any one target when multiple targets are present. (JCS Pub 1, DOD, NATO, IADB), p. 365.

**Target Priority:** A grouping of targets with the indicated sequence of attack. (JCS Pub 1, DOD, IADB), p. 366.

**Time-sensitive Targets:** Those targets requiring immediate response because they pose (or soon will pose) a clear and present danger to friendly forces or a re highly lucrative, fleeting targets of opportunity. (JCS Pub 1, DOD), p. 373.

**Traverse:** To turn a weapon to the right or left on its mount. (JCS Pub 1, DOD, NATO, IADB), p. 379.

**Trigger Points:** (Note: Used in FM 71-2 but not defined.)

**Trigger Line:** A fire control measure related to terrain (roads or streams), obstacles, or weapons capabilities that initiates fire when crossed by the enemy. (FM 71-2) p. 4-21.

1

The definitions were taken from the following sources:

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23. BG Richard S. Siegfried  
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- 24. MAJ Edwin Sullivan  
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- 25. MG Horace G. Taylor  
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- 26. BG John H. Tilelli, Jr.  
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- 27. BG Huga Wass de Czege  
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